

Aviation News

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JANUARY 17, 1944



Completes First Year as WTS Director: *R. McLean Stewart, Executive Director of Training for War Training Service, reports more than 207,000 young men have received pilot training under his administration. He cites a growing belief that colleges will be the backbone of post-war aviation training.*

Navy Planes, Up 280% in '43, to Double in '44

High quality of warcraft, held among best in world, credited as vital factor in victories of fleet aircraft.....Page 16

CAA Air Traffic Unit Maps Post-War Rules

Group outlines regulations for expected large-scale expansion of private flying after return to peace-time operation.....Page 34

WPB Reveals Distribution of Plane Contracts

California heads state list with \$8.7 billion out of total of almost \$45 billion from June, 1940, through October, 1943Page 47

Jet Propulsion Opens Wide Post-War Field

Performance of Army's new combat plane gives AAF major advantage in production and training programPage 7

ACC Urges Simplification of Air Rules

Chamber asks moderation of law to spur private flying; expresses general accord with Lea Bill objectivesPage 47

AA Reports on Burma Road, Alaska Air Jobs

Line has grown "to second largest international air transportation company in world" through ATC contractPage 36

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THE AVIATION NEWS

Washington Observer

THE ARMY REVEALS—Don't overlook Northrop's new night fighter, the P-63 "Black Widow," amidst the excitement and conjecture surrounding the jet propulsion announcement. There was considerable speculation in aviation circles as to what prompted the Army to make two such important announcements almost simultaneously. There were reasons, of course, and good ones, but these involved an intention to discuss the matter. Northrop failed to get the credit it deserved for what those who have seen it declare is a really fine new fighter plane. Watch for it when it goes into combat.

PRE-COMBAT DISCLOSURE—In making public the jet propulsion plane by Bell and the P-61 by Northrop, the Army broke a strict and long-standing censorship rule—in any other case about new aircraft until they have been in combat. It should be noted that the official announcement on the jet propulsion plane said directives have been issued for production of a sufficient quantity for training purposes. The Black Widow is announced as a combat plane.

JET PROPULSION IN THE FUTURE—The jet propulsion aircraft is the result in some wild fancies by imaginative writers. As a matter of fact, jet propulsion will become an important special device in the hands of the air force, but conventional engines and propellers will be the mainstay of this war and in the immediate postwar aviation that follows. It appears likely that first jet propelled planes assigned to duty probably will serve as interceptors, but it should be remembered that most of our fighters are now long-range escorts for bombers rather than interceptors, which are delicate weapons.

STANLEY, CRAIGIE, CHIDLAW AND KEPNER—To these four pilots goes the distinction of early deaths in the Bell jet propulsion job. Stanley, Bell's chief test pilot, was at the controls on the maiden flight of the first experimental aircraft. The next day Brig Gen. (then Col. Lawrence C. Craigie) flew the craft, thus becoming the first Army officer to fly a jet-propelled military aircraft in the United States. Later Brig Gen. B. W. Chidlaw and Maj Gen William E. Kepner took the plane aloft.

AIRBORNE MANEUVERS—The highly successful combined maneuvers employing ele-

ments of the Airborne Command and the Troop Carrier command, held near Camp Marshall in early December, were regarded in Washington as highly significant, although they were not widely publicized. Added to that significance is the success of those combined maneuvers held last weekend, which included the dropping of a



complete airborne division together with all its equipment behind "enemy" lines. The troops were supplied entirely by air and more than 16,000 men were involved. Lessons learned from the first operation were emphasized in the second and all will be directed at the enemy in good time.

PARATROOPS' ROLE—Army chiefs are giving special attention to the role that paratroops and glider-borne troops will play in the coming invasion, giving emphasis to the Camp Mitchell maneuvers. It was understood that about 65 percent of the glider-borne troops were loaded in the designated area and that an even larger number of paratroops reached their maneuver objectives. These results may delay the skeptics which had arisen at some Army circles regarding the employment of this type of troops.



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Initial Success of Jet Propulsion Opens Wide Field in War, Civil Use

High performance of Army's new two-engine combat plane encourages officials, although much time is required for production and tests; Bell plane similar to A-20 in appearance.

Within a few hours after the joint American-British announcement about the new jet propulsion aircraft, specialists as to what it was and what it could do began to develop and by the end of the week it had reached the intuitive proportions of wild-bird rambles.

Jet propulsion for aircraft is not new. It has been the subject of intense study for years in Germany, Italy, France, England and the United States, with indifferent success, but with enough to keep going. The British lay claim to flying the first one in August, 1940, and it is now revealed that the British flew theirs in May, 1941.

Major AAF Step—But what makes the American Bell twin-engine plane, first to fly on Oct. 1, 1945, so important is that it is a combat plane—not a laboratory test tube. This gave the Army Air Force a major step forward in its plans for future production and training, for in one operation it obtained the answers to two serious questions: Is a plane with twin jet propulsion units practicable and can it function as a military plane? There will be necessary for operations on a large scale, however.

Rough information was given in the official announcement published, with British observations since published, plus guarded comments by persons close to the project, permits a calm appraisal of what the plane is like and what lies ahead for jet propelled aircraft.

Principle — The principle of jet propulsion is the same everywhere. Air is taken in from the outside, compressed, heated, expanded and ejected through a nozzle at extremely high velocity—thus thrust pushing the airplane forward on the ground and in the air. Jet propulsion is used on conventional aircraft engine

exhaust stacks to squeeze out a little more speed from horsepower that otherwise would go to waste out of the exhaust.

The MACA fitted a standard fighter airplane with special exhaust stacks and increased the top speed of the airplane by 16 miles per hour. Persons who have seen the Whittle power plant and have heard the explanation of how it works are amazed at its simplicity of both construction and operation.

Reverberates Douglas A-26 — Although it has been reported from abroad that the Bell jet job looks like a P-38, people who have seen



Trails Jet Propulsion: Brig. Gen. B. W. Chidlow, Chief of the Materiel Division of the AAF's Office of the Assistant Chief of Air Staff, Materiel, Maintenance and Distribution. Gen. Chidlow has been a key figure in directing jet propulsion tests.

it here say it resembles a Douglas A-26 in flight and on the ground. Plans who have flown it report that it handles like most conventional aircraft, only easier, and they are unanimous in their supposition of two serious lack of noise usually found in the cockpit due to propellers and engines and freedom from vibration.

They also speak of the absence of torque and the smooth acceleration from standstill up to flying speed. It takes off like any other plane—just with a twist! The number of cockpit instruments and accessories also is materially reduced.

Ideal for Attack — Persons who have seen the Bell plane say it report that it is difficult to describe the sound it makes. First, they emphasize, it does not sound like a conventional airplane because there are no propeller or engine noise. As the plane approaches in a dash across the field, it is almost silent, because the exhaust which thrusts it through the air is located in the rear.

There is a slightly bluish as it passes overhead and then the noise takes on the sound of a freight train rumbling in the distance.

This description, it is pointed out,

New Night Fighter

Next combat plane of the Army Air Force, disclosure of which was somewhat overshadowed by the announcement of the jet propulsion plane, is Northrop Aircraft's P-61 night fighter, the Black Widow.

The plane, powered by two Pratt & Whitney engines, is described as "heavily armored and armed." Details and performance are still on the secret list, but the craft has a fairly long range and possesses effective speed and climb characteristics.

Especially designed for night flying and heavily armed, the Black Widow is the outgrowth of intensive research and development on the part of technicians of the Army Air Force and Northrop, devoted toward production of a powerful and effective aerial night combat weapon, equipped with the latest devices.

Development started more than three years ago and the contract for the first model was let to Northrop, in January, 1941.



Jet Propulsion Pilot—Robert H. Shuman, chief test pilot, of the Northrop aircraft, at the controls on the model flight.

will not agree with descriptions of the sounds made by the British model, and probably never will as the latter is a single engine job and of different class. On its silent approach qualities alone, the plane is represented an ideal for low-level attack work.

No Supercharging Needed—However, the principle behind the jet propulsion idea is that the higher the plane goes, the faster it travels and unlike the gasoline combustion engine, does not need supercharging. Sufficiently satisfactory speeds in excess of the fastest fighters now in combat anywhere, and at higher altitudes, have been obtained and the ultimate capabilities of the power plant experts to get more and more thrust (they don't talk in terms of horsepower) is at present unknown.

What pleases everyone concerned with the project—particularly Col. Don J. Keith and Col. Ralph P. Stedford, both of Wright Field and project officers respectively on the engine and airplane—is that on the first major attempt of the Air Force to adapt jet propulsion to a single motor fighter, they surpassed in speed the conventional fighters that have been slowly working up the scale since the days of Kitty Hawk.

Advantages — The principal advantages sought for jet propulsion

by its advocates are elimination of weight of engine, propellers and their accessories, and the elimination of maintenance problems and engine cooling and high octane gasoline. British reports are that the Whittle engine burns ordinary kerosene, and they state that the fuel consumption is high. Until this is adjusted or improved, the ship may be destined for the role of an interceptor.

With elimination of engine and propeller, the field of design opens anew. One which suggests itself immediately is a shorter landing gear which becomes possible because provision no longer need be made for propeller clearance. Another is an absolutely clean wing and a third, supercruise vision.

The Spirit — Emergent pilots transferring over to the jet propulsion job, frequently referred to around Air Forces experimental headquarters as "The Spirit," will have to forget more knowledge of plane operation than they will need to acquire, according to one airman who has made several flights. His reaction to the entire operation is that he wished he could never have to fly a conventional plane again. He added that perhaps that hope was crystallized for him when one engine quit on the takeoff and he never knew about it until after he had safely settled down for his flight.

While no announcement was made as to who would build the model successfully flown here, it was stated that plans are being made for a production order for training purposes and since Bell has built a number of these already, it doubtless will

continue with the "training order" as being best qualified.

Bell Gets First Order—Bell Aircraft was the first to receive an order to build a plane and make it fly with the General Electric-built Whittle engine, and achieved the distinction of making the first flight of a jet propulsion airplane in the United States and the first flight in the world of a twin-engine, combat plane using that principle. However, the Army and NACA went ahead with jet propulsion projects for other types and purposes.

The joint AAF-RAF announcement was a departure from usual procedure governing announcements of new combat aircraft prior to battle testing and enemy capture. Several times in the past year the announcement was made ready for publication, but each time was called back at the last moment by objections either from the British or the Army. Those closest to the project who had labored under a shroud of secrecy since September, 1943, took the position that, as the plane approached production, it could no longer be hidden from public knowledge and in spite of FBI oaths of secrecy and the Army stamp of "Secret" on everything pertaining to it, its phenomenal success is expected to be kept quiet much longer. As the project developed it became necessary to let in more and more people and sooner or later the story would break unofficially and perhaps reveal more necessary secret information than the controlled announcement.



J. P. Project Officer: Col. R. P. Shuford is project officer on the Army's jet propulsion airplane. He is a graduate of the University of Missouri and West Point and has been on duty at Wright Field on various technical projects.

J. P. Project Engineer: Col. Donald J. Keith is project engineer on the jet propulsion engine of the Bell experimental plane. He brought the original Whittle power plant from England to the U. S. and supervised its subsequent development.

Germans Work on Idea—But the Army also knows that it is foolish to believe that the Germans are asleep on this problem, first because characteristically they learn lessened developments of this sort and second they have had the advantage of all Italian research up until the collapse of their ally. In the late summer of 1942, when it was thought the story would then be announced, an Army official said he would not be surprised—rather he anticipated it—to receive reports any day

that our R-1s encountered a flight of jet-propelled interceptor fighters during a mission over Germany and for his part he certainly would be astounded at the American-British achievement to reach the American people first, rather than as a fellow story to any German propaganda on a new secret weapon.

It also is reliably reported here that the Germans have several jet propulsion types in an experimental stage, but he has information on production status is available.

WEST COAST REPORT

Demand Eases for Women Workers; Employee Efficiency Rising

Los Angeles correspondent cites establishment of more permanent industries on Coast; Goodrich tire spinner debated.

By SCHOLLER BANGS

LOS ANGELES — Aircraft factories and service shops on the Pacific seaboard, frantic builders for women workers during the man-months of '43, are easing off. Increasing availability of discharged war veterans as "factor X" in manufacturing plants have feared that, while women quality highly for installed routine operations and instrument work requiring manual dexterity, they are not too well suited to all-around shop work prepared of service mechanics. Douglas Aircraft, with a year-end payroll of 193,000 men and women, reports its manufacturing strength has dropped from a 32 percent female labor high to 44 percent currently. Whether the company's ratio of employment of women will swing up as an anticipated end-summer employment peak of 244,000 is approached will depend largely on releases of men from the armed services.

LABOR UTILIZATION — West Coast aircraft factories boast that for every 100 workers originally needed to build an attack bomber, an interceptor and a medium bomber, by mid-1943 the manpower requirement had been lowered to nine for an attack bomber, five for an interceptor, and ten for a medium bomber. "Labor utilization means to be a static matter of reorganizing, lively, human miracle on production lines. A year ago the assembly line was a wretched, straining thing that forced production upward by the sheer brute strength of men and

women who worked in sweat and confusion. Learning workers were under and on top of the feet of those who knew best.

A tour of Coast plants today shows assembly lines that move with easy production pulsations, lines and groups of workers all busy, their number blending into the machine scene. Men and women avoid their tools in easy cadence. No sweat. Few cusses. They've learned!

INDUSTRY WESTWARD — In many small ways, the trend toward postwar permanence of western war industries is asserting itself. An example: Bendix Aviation Corp. is making certain that products of its



Watching Northrop's "Black Widow" in flight: As the AAF's powerful two engine fighter makes a test flight, the performance is closely observed by (left to right) John R. Northrop, president and chief of design of Northrop Aircraft, Inc., builder of the Black Widow; Lt. Gen. William S. Klauder, director of production for the Army, and LeMotte T. Cohn, general manager of Northrop Aircraft. Details of the plane's performance are restricted.

Pacific Division, Bendix Aviation, Ltd., of North Hollywood, Calif., will possess a "Made in the West" identity. All aircraft components produced by the North Hollywood plant will be trade-marked as "All-star" products.

BLACK WIDOWS' SECRET — Northrop Aircraft's rumor-torn "Black Widow" night fighter, P-61, in full production at the company's Hawthorne, Cal., plant, no longer is a secret to more than 200,000 Los Angeles residents.

They saw it fly low overhead, behind in the glow from batteries of Army searchlights, a shy set in Los Angeles Memorial Coliseum, attending the Army-Navy combat show staged Jan. 8 and 9.

RESTRICTED — Other thousands of residents have become familiar with it through test flights at Northrop Airport during the past year.

Currently, however, the War Department will not permit public description of an appearance or details details, allowing only the announcement identifying one of the planes flown over the Coliseum as the P-61.

H. M. Fenwick Joins Curtiss-Wright Corp.

Rush M. Fenwick, former assistant to the executive vice-president of Consolidated Vultee Aircraft Corp., has joined Curtiss-Wright Corp. Fenwick, a veteran pilot with service in both the Army and the Navy, recently returned from a five months' tour of air bases in England, North Africa, Burma and India during which he flew over 300 missions.

Started With Standard Oil—He

started his aviation business career in the Aviation department of Standard Oil of New Jersey and in 1937 joined Aviation Corp. and went abroad as European representative and engineer's test pilot for the organization. He represented Aviation

Corp. in Rome until October, 1943, when he was elected vice-president of Vultee Aircraft, Inc. When the latter merged with Consolidated in March, 1943, he was appointed assistant to the executive vice-president of the new organization.

Technical Advances in Aviation Discussed at SAE Detroit Meeting

New President William S. James predicts continued use by competing companies of wartime policy of pooling technical knowledge developed through an industry research.

By ALEXANDER McHURLEY

Use of rigid lighter-than-air craft as commercial post-war transportation came under discussion at the meeting, with speakers pointing out the advantages of such craft over conventional aircraft, increased use of cheaper aluminum in aircraft engines, and return of air-cooled engines, which were used by their aviation experience, in the automobile field, were among prospects for post-war technological advances offered by speakers at the war engineering annual meeting of the Society of Automotive Engineers in Detroit, last week.

Significant, likewise, was prediction of new SAE President William S. James, chief engineer, Studebaker Corp., that wartime pooling of technical knowledge by competing industries had brought such important gains that it might be expected to continue on a scale never seen before in peace time.

Other Officers—James succeeds M. Sherr, chief engineer, Vesp

Aircraft Corp., Burbank, Calif. Other aviation men taking part in SAE for 1944, as a result of the mail election announced at the meeting include: Arthur Nutt, vice-president of Wright Aeronautical Corp. as member executive council; and following SAE vice-presidents R. D. Kelley, developmental superintendent, United Air Lines; A. T. Gregory, chief engineer, Ranger Engines; E. H. Smith, executive engineer, Aircraft Engine Division, Packard; E. C. Deimet, chief engineer, Aircraft Division, Willys Overland; A. J. Blackwood, fuel research engineer, Standard Oil; J. R. Sakina, manager Petroleum Test Laboratory, airport.

The meeting was marked by presentation of a distinguished service award to the Society by U. S. Army Ordnance Department for the Society's outstanding engineering advisory service and development of post-war machinery for continu-

ation of such service to the Army and Navy. The award was the first of its type by the Ordnance Dept. to any professional society.

Five-Ton Bombs—Gen. C. M. Burns, Chief of Development, Army Ordnance Dept., presented award and in a press conference disclosed that the U. S. has produced aerial bombs up to 10,000 pounds but would not say if any have been used in combat. He said use of 15 mm. guns on airplanes was a more significant weapon than had been reported in the press. He refused comment on possibility of still larger guns for planes. In a dinner talk, he discussed captured Jap and German tanks, trucks and guns, saying Japan's weapons lack firepower and this disadvantage will prove fatal. German weapons indicate thorough planning, but America has the edge now from an engineering standpoint.

The rigid airship should play an important part in long-range cargo hauling after the war, Lieut. Comdr. Ned MacCull, member of the experimental staff, Naval Air Station, Lakehurst, declared. He drew a comparison of theoretical performance of the Macon with modern airships versus a modern cargo plane, pointing out lower fuel consumption per unit cargo for the Macon. Power required by a plane per ton of airship may be five times that of an airship, or for extreme range of 5,000 miles it may be seven times. A newly designed cargo airship would give far better performance than the Macon, which was built more than 30 years ago as a military experiment. He suggested possibility of improving ship performance by using a pusher propeller at the stern.

Aluminum—L. W. Kempt, Alcoa, Cleveland, predicted aluminum would be available in secondary grade at around five cents a pound after the war, making automobile makers to benefit from its light weight at little premium over present production cost. He said non-aluminum would continue to be used principally by aircraft industry because of its cost.

J. P. Flannery, Aircooled Motors Corp., appealed for careful engineering using low-cost materials, for post-war light plane engine design, to attain quality at low cost.

Air-Cooled Engines—Chester Stetler, Detroit office of Aviation and Wings, discussed status of air-cooled engines as automobile power plants, and cited their use in tanks, in the German Volkswagens, and other surface vehicles. Flannery also referred to this, showing a proposed design of an air-cooled engine and Gertrude Sorenson, engineer for Ranger Engines, pointed out that synthetic rubber was replacing natural rubber in many uses in aircraft engine manufacture and was proving more satisfactory, in parts coming in contact with fuels, oils and oils, and outlined research problems dealing with synthetics for engines.

Safety Record—Stephen H. Ralls of CAA, presenting a summary of aircraft engine failures from January 1941 to July 1943 in U. S. civil aviation, and airlines flew 346,000, 300 miles with only seven forced landings resulting from engine failures. He said that these planes damaged, solely lost.

D. P. Bernard and R. F. Manchester of Standard Oil of Indiana, said 194 engine problems for automobiles were far in the future because of the lack of crude oil which would remain under present methods. They said there may be 80 years for autos by 1960.

Motor Time Between Overhauls Doubled

Time between overhauls on Pratt & Whitney engines on combat airplanes has been more than doubled since the start of the war, with these engines being operated up to 975 hours between major overhauls, William P. Gwyn, acting general manager of Pratt & Whitney Division of United Aircraft Corp., said that before Pearl Harbor, the military service rated Pratt & Whitney engines at 424 hours between major overhauls and that today 1,500 hp Twin Wengs are being flown as



NEW EXPOSURE SUIT:

A Royal Canadian aviator is shown wearing one of our experimental types of exposure suits tested in water at 60 degrees temperature, with air temperatures about 19 degrees. These overhauls generally would be done by airlines before overhauling planes forced down at sea. They would ward off effects of shock from immersion, keeping the man warm for hours.

much as 975 hours and 2,000 hp Double Weng 950 hours before being torn down for overhaul.

Engine Outlets—The engines, he said, serve longer times the more before and cited the fact that a Consolidated Liberator crew operating over Germany is relieved usually after logging 100 hours. A fighter pilot probably would be relieved after even fewer combat hours, when serving the Double Weng in a Thunderbolt, Corsair or Helocat could serve several pilots before a major overhaul.

Barring refueling and oil changes, Gwyn pointed out, one of these heavy cranes at 300 miles an hour would be perched between overhauls would travel 574,000 miles.

Community Airport Planning Urged

Col. Johnson, CAP commander, calls municipalities not to wait for big fields.

Every community in America should be acquiring land and drafting plans for airports, with provision for future expansion of the sites, Lt. Col. Earl L. Johnson, AAF, national commander of the Civil Air Patrol, told the annual New England Aviation Conference at Boston last week.

He proposed that community airports be dedicated as essential to the men and women serving overseas.

Airports Key to Growth—"We can advance into the air age," he said, "only if we build an adequate system of airports. The airport is the foundation for all aviation."

"While the present shortage of materials and labor will prevent much actual construction during the European phase of the war, every community can get the land and develop detailed plans now."

Don't Wait—"Don't wait until you can prepare for a big airport with paved runways and expensive buildings and hangars. Plan for a little airport now. A field of 100 to 200 acres will do. Find the best available tract as close as possible to town and option or buy it through private or municipal funds. Then flying can start as soon as you have graded and graded the runway, waiting for other improvements."

"If possible, provision should be made for future expansion and proper sites should be selected for buildings. But initial plans are so much additional cost, that you are afraid of the expense and do nothing."

Field in Community—Col. Johnson stressed that acquiring the land involves no risk. "If you believe in the future of your community, it should appear to you as a sound investment. If local aviation plans do not pin out, the land may be sold without loss and possibly at a profit. But if you get the land, you are likely to find that aviation can develop as a local business."

"Opportunities will develop for charter services and feeder and pickup service. The field will be linked with nearby airline terminals for mail, express, freight and passenger traffic and will play its part in the development of the big plans of aviation as a business. Under the last war, many a town spent more for a monument of stone or bronze than a



PATCHED UP "MITCHELL" FLIES ON:

As AAF photographer caught this North American B-25 of the 12th Air Force over Yugoslavia. Note black

patches over holes made by flak in recent raids, especially along leading edge of right wing and on fuselage.

good airport would have cost. Build a permanent airport instead, and you will have it ever on guard for ac-

vision to the country in fitting recognition of those who have fought for the right to fly."

Stewart Calls for Full Use Of Pilot Training Facilities

Cites plan for continued use of independent flying schools during and after the war; reports WTS trained more than 207,000 service pilots in 1943.

Even after the Armistice, national security will demand that flying schools be provided for young people to maintain an emergency pilot nucleus. No one will suggest reliance on a reserve of World War II to form another fighting air force.

Army Air Forces met its spring of training schedule across the country has no doubt that it can supply this nucleus.

If the nation exacts some form of compulsory military training for the AAF (and Navy) personnel, all aviation schooling from primary to final stages.

► Realistic—If the service, however, see dependent on civilians, it may be necessary to rely heavily on civil schools for primary aviation training.

McLellan Stewart, completing his first year as executive director of training for War Training Services, told the Association of American Colleges at Cincinnati last week that facilities to enable 100,000 young men to learn to fly every year would represent a reasonable training plan.

► Civil Need of Pilots — "We will need them if we are to retain our command of the air," he said. "We will need them for civil aviation. We will need them as a reserve. We will need them to provide individuals to the unneeded resources of private individuals. It seems to me that to some extent at least the government must help in the development of postwar civilian pilot training."

Stewart called for adoption of a policy utilizing continued employment of the nation's colleges and local flight operators for the remainder of the war. He cited a War and Navy body recommendation that the colleges will constitute the backbone of our postwar system of aviation training."

► Training Scholarships—A program might include awarding of flight training scholarships to qualified college students, with 42 to 66 hours of flight instruction in primary

WTS Schools Hit

Use of the national system of independent, privately owned flight schools will decline steadily in the next few months, with the service. Service disbanding by June 30 unless the Civilian Pilot Training Act of 1940 is extended promptly by Congress.

Army courses at 87 flight schools are in process of termination while about 90 other flight schools are receiving notice that their Navy contracts will not be renewed. As crew centers at 107 other flight schools will continue activities soon. In addition, about 146 colleges now give ground courses to WTS students.

Since the Army and Navy expect total volume of air training to diminish, to provide any for the WTS, the service is investigating that their own schools can do the job. This, however, will result in closing and bankruptcy for the most commercial schools, with the integrated system of nearly 10,000 trained employees, plane parts, and aircraft being shipped.

trainers furnished, if necessary, by the government. A special grade of civilian pilot certificates could be established, with provision for their issuance in Army or Navy schools.

Under the proposed plan, the Federal government would act in providing these scholarships. Each student would be available, if called, for military service.

Stewart said WTS in 1943 trained more than 207,000 AAF and Navy men as pilots.

He added that, in the first six months of 1943, WTS logged 1,864,595 hours, while in the last half the figure was 2,374,026 hours. At Dec. 31, there were 7,864 pilots in the training program.

Taylor Heads ACC Development Council

Successor S. W. Voorhes, of Lockheed Aircraft.

Irvine H. Taylor, of Douglas Aircraft, has been named chairman of the Economic Development Council of the Aeronautical Chamber of Commerce, succeeding S. W. Voorhes, of Lockheed Aircraft, who has been chairman of the Economic Development Committee and council since their organization last year.

James C. Wilcox, of Curtiss-Wright, was named vice-chairman and J. Stacy Smith, of Jacobs, the chief engine Co., deputy vice chairman in charge of liaison activities of the Council as successor to Wilcox. The other deputy vice chairmen of the Council are Robert B. Lusk, Sperry Gyroscope and H. W. Cohen of Northrup.

The Council authorized creation of a Commercial Aviation Committee, whose function will be that of considering problems relating to domestic aircraft development for the aircraft manufacturing industry. Details of the organization of this group remain to be worked out.

The organization committee approved creation of the position of Director of Economic Development in charge of the work of the council, involving three service departments of the Chamber, which function under the office—legislative, statistical and information.

Industry Studies Termination Plans

Program believed step in right direction and good beginning to solution of vital problem.

First reaction of representative leaders of the aircraft industry to the contract termination program devised by Bernard Baruch was that the plan is a step in the right direction and a good beginning to a solution of vital concerns to the industry generally.

Baruch, head of the War and Post-War Adjustment Advisory unit to the Office of Special F. Byrnes, War Mobilization Director, and his assistant, John Hancock, chairman of the Joint Contract Termination Board, proposed a uniform contract termination clause for fixed price contracts which permits full payment at termination for all activities completed by the contractor on termination date, and limit the profit on

activities not completed to six per cent. **► Speech Settlement**—Byrnes made the proposals effective with a directive to all government procurement agencies and award the program made by Baruch and Hancock was an important move toward eliminating delay in a contractor's getting his money and a delay in an employee getting a job.

There was a feeling in aircraft industry circles that the Baruch recommendation had given considerable support to the idea that industry leaders had expressed down time to time and that the really important phases of a complicated problem had been singled out and dealt with in a manner which would aid the industry.

► Reservation—At the same time, some industry circles made some reservations, pending results of operation of the program to war industries generally, and the aircraft industry in particular. There was some adverse comment, but the attitude for the most part seemed midway between throwing hats in the air and disappointment.

Baruch and Hancock, in their letter of transmittal to Byrnes, and the "manifesto" will be having this termination article in their contracts," and added that "it will assure uniform handling of their claims by all of the agencies with which they have contracts, eliminating possible conflict and confusion over varying contract provisions; it will make for swifter and more equitable settlement, give manufacturers a clear definition of their rights, reduce litigation."

Liquid vs Aircooled Motors Discussed

Relative merits of liquid cooling as compared to air cooling of engines were referred to briefly by C. A. Stinson and W. R. McCraw, engineering department, Chrysler Corp., in a paper presented at the recent meeting of the Society of Automotive Engineers.

"Briefly stated," they said, "compulsions we have made indicate that 25 percent greater horsepower would be required in an air-cooled engine than a liquid-cooled one to produce the same top speed in an otherwise identical airplane."

► Power Reductions—"The power reductions with liquid-cooled engines are split about equally between reduced cooling drag, due to an optimum radiator size, and reduced fuselage drag, due to the better streamlined nose shape. The

power required to overcome the cooling drag and blunt nose fuselage drag was built into an air-cooled engine in the form of cooling fins and overall shape, respectively. "The liquid-cooled engine radiator

can be shaped by the airplane designer to reduce cooling drag to the vanishing point, and the overall shape is such that the nose of the fuselage can be readily streamlined."

FEDERAL DIGEST

WPB Acts to Cut Industrial Toll Costing U.S. 18,000 Workers a Year

Five-point program planned to reduce plant accidents; Summary of week's activities in federal and war agencies.

War Production Board has undertaken an intensive campaign to reduce industrial accidents impairing war production, according to Joseph O. Keenan, vice-chairman in charge of labor production. "Each year a full division of soldiers of productive life of accidents at their work," Keenan said, "and in a nation at war, the loss of 18,000 workers is a heavy blow."

The anti-accident campaign will be carried out by the Industrial Health and Safety Section of the Labor Production Office, under the immediate direction of John M. Fowkes. Administration will be in the hands of May M. Brewer, director of the Plant and Community Facilities Service.

► Five-Point Program—Representatives of labor and management at

the first meeting of the advocacy committee outlined a five-point program for this campaign. They recommended that the Industrial Health and Safety Section bring in the attention of Federal agencies with operational authority and technical staffs, problems of industrial health and safety that are interfering with war production, establish procedures to assure the carrying out of remedial action; promote more intelligent and widespread acceptance by labor of its responsibility in the health and safety field; help promote the establishment of plant labor-management committees on health and safety; and assist in establishment of classes on health and safety.

► War Production Board—Because of continuing pressure for increased anti-accident bearing for military



NAVY DELIVERIES OF BIG DOUGLASES INCREASE

Deliveries to the Navy by Douglas Aircraft Co. of four-engine transports will increase substantially this year. The Chicago plant will reach full production on the model shown above, before the year ends. Plane above (known as the C-54 or the A-40) is shown near Mt. Rainier, Washington.

purposes, the Tools Division of WPD has undertaken a selective survey to enable it to determine the extent of anti-friction bearing usage requirements. One hundred fifty large users have been asked to submit their requirements for the period from March to August 1946. By Feb. 1, Regional WPD offices will assist companies in filing their requirements. WPD pointed out, however, that any company not directed to file Form WPD-3433, is not requested to file any return and should not endeavor to do so.

■ Labor Problems—War Margovitz Commission announced that, although an intensive recruitment campaign by WPAIC has resulted in a steady decline in the unemployment level in anti-friction bearings production, the industry still faces serious labor shortages.

■ Defense Plant Cuts—An increase in the contract backlog of the Army Corp. amounting to \$1,000,000 was announced by Defense Plant Corp. The increase, designed to provide additional facilities at a plant in Lucas County, Ohio, brings the overall contract backlog of DPC to approximately \$7,600,000. Packard will operate these facilities, title remaining with DPC.

■ Pay Increase Granted—Stratford War Labor Board unanimously affirmed an order of the 4th Regional WLB in Atlanta, Ga., granting ten cents an hour increase to approximately 600 workers at the Nashville plant of the Tennessee Aircraft Corp. The board also granted a petition by the company for reconsideration of the dispute between it and the International Assn. of Machinists, bargaining agent for the employees, and the International Assn. of Shipbuilders, the union which the company has presented as evidence that the Regional Board order contravened WLB policy or resulted from unfair procedure.

■ New Plant Elections—Elections were ordered by National Labor Relations Board for ocean employees at two aircraft plants. Salaried employees at the San Diego plant of Consolidated Vultee Aircraft Corp. will vote for or against representation by Aeronautical Industrial Dist. Lodge 1125, International Assn. of Machinists, AFL, within 30 days of Dec. 31.

At Douglas Aircraft's Long Beach plant, within 30 days of Dec. 31, employees in the electrical maintenance and electrical construction departments will vote for UAW-CIO, International Assn. of Machinists, AFL, International Brotherhood of Electrical Workers, AFL, or none. Shortly paid production and maintenance workers at the same

plant will vote for UAW-CIO, International Assn. of Machinists, or neither. Consequently, NLRB dismissed the petition filed by International Union of Operating Engineers, Local 233, AFL, finding that employees at the requested unit do not fall in a recognized bargaining group to constitute a craft unit.

■ Bargaining Agent—International Assn. of Machinists was certified as bargaining agent for production and maintenance employees of the Aero Division, Minneapolis—Honeywell Regulator Co., Chicago. This union received 80.4 percent of the votes cast at an election Dec. 29.

■ American Aircraft Workers, Local 114, of Cured Employees, Redesignated—Workers of America, CIO, was certified by NLRB for production, maintenance, inspection, setup, powerhouse, stockroom, toolroom, tool crib, trucking, material movement, repair, painting, storage, stockkeeping, inside expediting and dispatch employees of Bendix Aviation Corp., Philadelphia, following an election Dec. 31.

■ Union Certified—At the Park Division plant of Douglas Aircraft Corp., the following unions were certified as a result of elections held Dec. 1: For electrical maintenance

employees, International Brotherhood of Electrical Workers, AFL, for maintenance employees, Carpenters District Council of Chicago, AFL, for pipe fitters, plumbers and their helpers, United Assn. of Journeymen, Plasterers & Steam Fitters at the U. S. and Canada, AFL, for maintenance, production, and maintenance employees, UAW-CIO.

■ Airport Construction—The War Dept. announced the authorization for construction of a 150-foot x 2,160-foot runway and four taxiways on the east side of Randolph Field, Tex., at an expenditure of \$493,150. A contract amounting to \$404,249.70 was awarded to a Tampa, Fla. firm, for clearing, grubbing, grading, pavement, removal of obstructions, etc., at Brookhaven Army Air Field, Fort Myers, Fla. For construction of additional warehouses at the AAF Supply Depot, Los Angeles (Maywood), Calif., a contract amounting to \$175,891.76 was awarded.

■ Chief of Engineers of the War Dept. let contracts for construction of various units at Army air bases, airports, fields and flying schools, amounting to approximately \$3,380,000. Largest single contract, \$438,728.14, was for paving, construction of additional drainage, etc., at Hazzard Field, Ga. For new facilities at Camp Beaman, Army Air Field, Washington, D. C., a contract amounting to \$276,936 was awarded. Other contracts were for taxiways, runways, hangars, temporary buildings and a parade building.

Aviation Experts On Airport Program

The list of speakers for the airport conference at Kansas City Jan. 26 and 27, sponsored by the Aviation Department of the local Chamber of Commerce, is a roster of airlines, government and city officials.

Between 600 and 100 persons are expected to attend the sessions, compared with more than 300 who were at the Kansas City Chamber's local air service conference two months ago. The conference this time are being drawn from Chamber of Commerce and municipal officials in communities of 1,500 or over in nine states.

Airport executives and various technical advisers will participate in discussion periods throughout the meeting, which will cover such subjects as airport uses and requirements, operations, construction features, airports, airport financing, community airport planning and use of turf airports.

Efficient Gliders

Await New Designs

Waco engineer says commercial craft won't have military counterparts.

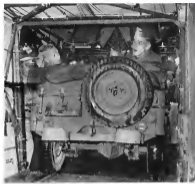
Passive uses of commercial transport gliders await designs specially planned for such work, eliminating the specialized characteristics required for military troop and cargo gliders now in use in World War II. C. Francis Archer, an authority on big military gliders, told members of the Southern Ohio BAR section of a Dayton meeting last week. Archer, vice-president in charge of engineering at Waco Aircraft Co., directed design of all three of the Army Air Force's larger gliders, the 3-place towable craft, the 15-place troop carrier and the still larger CG-13 cargo craft.

■ Versatile—The tactical glider is a thoroughly justifiable piece of equipment with a degree of versatility to be found in no other single type of tactical aircraft, but it is rather inefficient from a pure engineering viewpoint because of conflicting requirements," he explained.

A military glider must be at the same time light and highly maneuverable as it is to preserve defense against air attack, and rugged enough to carry such diverse loads as field howitzers, trucks, machinery, ammunition, supplies, and men, and to land on rough ground or on the water. It must be able to fly, stable in tow, yet have a large speed range, descending rapidly at times, and slowly at other times. It must have a permanent landing gear for some missions, and a droopable landing gear and landing gear for other missions. At first planned as non-replicable, to be abandoned on completion of a mission, it is now likely to be picked up by the tow-plane, tow fields and towed for use as a plane to land, through aerial pickup technique.

■ Mixed in Two-Plans—The ideal transport glider, Archer points out, should be "mixed" in its tow-plane, with similar wing loadings and strength factors. The tow-plane should have ample engine cooling capacity to permit economical lean carburetor setting with closed coolers, running at low-pressure altitudes, on a hot day.

The engineer submitted a study of the possibilities of a transport glider design, even when towed by an army bomber or patrol plane, out of an "ideal" tow-plane. The glider, with a 75 foot wing, and a wingloading of 35 pounds per



JEEP ENTERS GLIDER:

Foot Center soldiers back a jeep into a CG-4A glider, like those used in the Syrian invasion. Photo was taken from inside the glider looking toward the front. Nose of the glider is ruined and jeep, swarmed by airborne shock-troops, is backing in.

square foot, would have a gross weight of 12,000 pounds, with a 5,000 pound disposable load, retractable tricycle gear, automatic landing, large flaps and general aerodynamic cleanliness.

■ Fuel Carrier—Operating on a theoretical 1940-mile radius fuel delivery mission, the pursuit plane could deliver 1 gallon of fuel for every 236 gallons consumed for the round trip, while the bomber could deliver only one gallon for every 347 consumed, showing a decided edge for the pursuit plane as a tow-plane.

Comparing the transport glider with two typical tactical gliders, to determine the thrust horsepower required, his analysis showed that the transport glider could haul 6,000 pounds at 110 mph, using less than 100 hp, and that the speed could be increased up to 128 mph before the thrust horsepower climbed to 200.

■ One Glider to Two-Plans—A tactical glider with 4,000 pounds disposable load, maneuverable, would require 268 hp at 118 mph, with the horsepower mounting rapidly as the speed was increased above this figure, and at 159 mph it was more

than triple the amount required for the transport glider. A larger tactical glider with 5,000 pounds disposable load, would require 300 hp at 110 mph, with the horsepower mounting less radically as speed increased, but still reaching a figure nearly four times that required by the transport glider, at 159 mph, to carry a load only one-third greater.

Archer believes one glider to a tow-plane will be the most efficient arrangement for long hauls.

Lee Approval Likely

The Senate Commerce Committee probably will approve early this week the renominations of former Senator Jash Lee as a member of the Civil Aeronautics Board.

A Commerce subcommittee announced last week it was ready to report favorably on the President's election of Lee to succeed himself as a board member for a year since the Oklahoma became a CAB member.

The full Committee is expected to send the renomination to the Senate for confirmation on the same day it is reported by the sub-committee.

COMMENTARY

Navy Planes, Increased 280 Percent In '43, to Double Again in '44

High quality of aircraft, held among best in the world, credited as vital factor in victories of fleet aircraft.

The year 1943 saw a 280 percent increase in airplanes of the U. S. Naval Air Force (5,800 to about 16,000). According to current schedules, by the end of 1944 the figure will be nearly doubled again. The support point, however, is not the numbers. On all counts, U. S. Naval aircraft, type for type, are the best in the world. In addition to their quality as airplanes, they fit perfectly into the tactics and strategy of the Fleet, and into task force operations.

Wings for Patrol.—An interesting phenomenon of this war, and an eloquent testimony to the vastly increased reliability of the airplane, is the Navy's widespread use of land-based planes for long range over-water operations. Without detracting from the unique role played in the war by such land-based types as the Catalina (PBV), Coronado (PBIV), Mariner (PBM), and British Short Sunderland, both the U. S. Naval Air Arm and the RAF Coastal Command have made steadily increasing use of such land-based types as the Lockheed Hudson, Vega Ventura and Consolidated Liberator. Similarly, the Lockheed, with the Pechen-Walt Kawanee and more recently the Hercules III. Requirements for such planes include large fuel capacity, speed, accurate defensive protection, power-operated gun turrets, armor and lightweight fuel tanks, and a large quantity of depth bombs.

The Navy version of the Liberator (PBIV) meets these specifications so well that it has become the standard long range reconnaissance plane for armed scouting. In order to increase the range, some of the armor and armament of the Army B-24 has been removed, and other alterations have been made. For medium range anti-submarine work the Lockheed Ventura (PBV-3 is the latest designation), with two powerful "Double Wasp" engines, has been doing an outstanding job.

Torpedo Planes.—No weapon has played a more dramatic role in World War II to date than the torpedo plane. The obsolete Fairey Swordfish sinking the Italian Fleet at Taranto and the almost equally obsolete Douglas Devastator (TBD) flown by the immortal Torpedo Squadron 8 at Midway, have been superseded by the British Seaforth and Barracuda, and our Navy's Avenger (TBF). This last, powerful torpedo bomber, pulled out of the hat at Midway to the utter dismay of the Jap Navy and Navy, is widely reckoned as the world's best.

Scout Bombers.—As the name indicates, scout bombers have a dual function. The Coral Sea action, one of the turning points of the Pacific fighting, is a good example. Scouting far in advance of the fleet, they revealed the presence of Jap patrol planes, located Tokyo Harbor, and brought back the information regarding the concentration of Japanese shipping there, upon which the plan of attack was based. Then,

leading their bomb racks, they became "dive" bombers and in less than 12 hours blasted into oblivion 14 Jap warships and transports. The Devastator (BBD) repeated such exploits over and over again, but it was gradually being superseded by the new Hellcat (BSF), faster, more powerfully armed and with greater range and bomb load. This ship, too, is widely regarded as the world's best in this category.

Command of the Air.—If anything has become axiomatic in the present conflict it is that no Military or Naval operations can become successful without guessing and maintaining control of the air. This is Douhet's fundamental contribution to the strategy of warfare, first stated by him as far back as 1909. Control of the air means the domination of the air over a specific territory to such a degree that our planes can operate there successfully and our enemy's planes cannot. Germany had it over Poland and France in 1939 and 1940 and for the first few months of their Russian campaign. The RAF had it decisively over Denmark and also during the air battle of Britain. The Japanese had it in Asia and the early Pacific fighting, but lost it when the A. V. G. came into the picture and a bit later when Army-Navy-Marine fighters turned the tide at Midway, Guadalcanal and Eastern New Guinea. To maintain control of the air we must have planes that will knock down anything the enemy sends over. Here is the role of the specialized fighter plane, and to perform its job effectively it must have speed, rapid climb, maneuverability and concentrated firepower.

Navy Fighters.—Just as the RAF



Back the attack—with War Hawks.

Firepower of a Fortress

This is a sight that Axis planes have learned to dread.

It is one of the reasons the Japs announced that America had introduced a "four-engine fighter plane," when a new model of the Boeing Flying Fortress* first went into battle action in the Pacific.

It is why British Air Chief Marshal Sir Philip Leech recently declared: "It almost looks as though the Fortress type of bomber has defeated the contemporary fighter."

The main job of the Fortress is, of course, high-altitude precision bombing. Its objectives are often deep in enemy territory, hundreds of miles beyond the range of fighter escorts. Fortress crews, therefore, must be equipped to handle the heaviest opposition the enemy can send against them.

They are! Each Fortress can spit thousands of bullets in any direction, with deadly accuracy up to half a mile. A formation of six Fortresses can place a constant fire around itself totaling more than 5 tons of lead a minute!

That's why the Fortresses are chosen, day after day, for the toughest assignments. Their crews are among the best in the world. In addition to the almost unbelievable accuracy of their bombing, they have earned for the Fortress the description of "deadliest fighterplane destroyer of the war."

You will find that Fortress crews have deep respect for lasting design and engineering, whole-hearted confidence in Boeing integrity of construction. They have good reason to know that... if it's "Built by Boeing" it's bound to be good.

U. S. Army Air Forces

AIR FORCE	STATIONED	COMMANDER
First	Myrtle Field, N. Y.	May Gen Frank O'D Hunter
Second	1st Bombardier, El Paso	May Gen W. G. Clark
Third	2nd Bombardier, Spokane, Wash.	Street
Fourth	Tampa, Fla.	Brig Gen Whitelaw T. Luman
Fifth	Sao Francisco, Cal.	May Gen William E. Lynd
Sixth	Northern Australia-New Guinea	Brig Gen George C. Kenney
Eighth	Albany Field, Carol Zone	Brig Gen Ralph E. Wooster
Ninth	Hickam Field, Hawaii	Brig Gen Joseph E. Bowers
Tenth	England	May Gen James Doolittle
Twelfth	Middle East	May Gen L. H. Brewster
Thirteenth	India	Brig Gen Howard Devinen
Fourteenth	Alaska	May Gen Davenport
Fifteenth	Northwest Africa	To be announced
Sixteenth	New Caledonia	To be announced
Seventeenth	Burma	May Gen C. L. Chennault
Eighteenth	Southern Italy	May Gen Nathan F. Twiss

DESIGNERS OF THE FLYING FORTRESS • THE STRATOFORTRESS • FOUR AMERICAN GLIDEPATHS

*THE NAME "B-29" PRESENTLY USED. STRATOFORTRESS. ALL RIGHTS RESERVED BY BOEING

BOEING

weaned control of the air from the Luftwaffe with their Spitfires and Hurricanes, and the Flying Tigers from the Jap Air Force with their P-51's over Burma and China, so Navy and Marine fighter squadrons in view of Germana Wildcat, despite tremendous odds, were able to do two things. (1) By and large they denied the enemy power to send over his fighters, drive and torpedo bombers against our bases and installations, and (2) were able to keep the skies sufficiently free of Zero to enable our bombers to accomplish their missions. During the past few months, our superiority in the Pacific has become so clearly marked as to bring admiration from Tokyo.

Not least among the reasons is the equipment of several Marine and Navy fighter squadrons with the fast, hard-hitting Corsair and Hellcat fighters, both fitted with 2,000 hp double Wasp engines, far more powerful than anything found in even the newest Jap fighters. With this pair of top-notch fighters, suitable for operation from carriers or island bases, the Hellcat and improved Dauntless dive bombers, Avengers torpedo bomber, Liberators and Ventura patrol bombers, the 1944 Navy air team looks set to go places.

Army Schools Merge

The AAF Administrative Inspector's School at Fort Logan, Colo., and the Technical Inspector's

School at Lowry Field, Colo., have been incorporated into one institution school to comprise a new department in the AAF School for Applied Tactics.

The new Inspection Department will train administrative, technical and tactical inspectors at the AAF Tactical Center, Orlando, Fla.

Personnel Consolidated—The transfer, which will not affect other military activities at the two Colorado camps, is part of a move to consolidate personnel and equipment in the interest of economy and efficiency and additional moves are contemplated, according to the AAF.

Present plans call for a Technical Inspector's division, an Administrative Inspector's division and a Tactical Inspector's division.

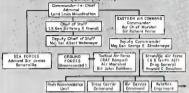


BOMBS FOR FIGHTERS:

The story of fighters carrying bombs is old, but this photograph is new and shows the first bomb ever to be loaded under an American fighter plane flying from England. Lt. Herbert K. Field, right, pilot of the Republic P-47 Thunderbolt, is supervising the loading of the bomb by the ground crew.

SOUTHEAST ASIA COMMAND

(January 1, 1944)



B-17s Used for Cargo in Southwest Pacific

B-17 Flying Fortresses are being converted into transports for use in southwest Pacific areas where operations by heavy aircraft or anti-aircraft forces are likely, according to a United Press dispatch.

The story was specifically confirmed by Air Force officers in Washington, who said they believed the older B-17s were being converted, with modification facilities now at the air front.

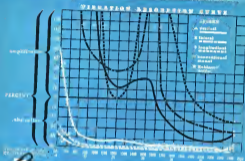
Army Equipment Dropped—Cargo bins are fitted into the planes so that they are supported by the bomb racks. The bombardier releases the cargo selectively with his bomb controls. Some kinds of supplies, such as clothing, blankets, tents, light food, and other non-breakable goods are put down in a free fall. Cargo subject to damage by impact is dropped on parachutes, which are folded into the bins, attached

Halsey Notes Decline in Jap Air Force

Admiral William F. Halsey, in Washington for a series of conferences, said Jap planes had been improved, "but there is a very decided deterioration in Japanese pilots," who, he said, are not willing to come out and fight as they did in the initial stages of the Pacific campaign.

"They are sending out kids in their naval air force," Halsey said. "The number of their officer pilots is dwindling and the ratio of non-commissioned to commissioned pilots is increasing by leaps and bounds. We get these little yellow monkeys now, and they're monkey kids who don't know what it's all about."

Vibration Control: The chart reproduced below shows the comparison between a conventional shock suspension and a Robinson-designed Neutral Axis shock suspension. These tests were made with an aircraft radio transmitter of standard make, installed in the shock mounts. The radically improved performance indicated, is now available to the industry.



MEMO TO Engineers

The curves shown are plotted from actual readings taken on an American military airplane. Vertical, lateral, and longitudinal impulses were produced simultaneously and the airplane was exactly maintained in level and the power of vibration was constant and the power of vibration was constant and the power of vibration was constant.

Vibration control problems submitted to us are treated in consultation through the various steps of investigation, design, construction of experimental models, production in our laboratory, and flight tests in our own airplanes. The finished product is a complete shock and vibration resistant mechanism. The unit is not confronted with the problem of design, location, and rock connection. Our full services are available for the solution of problems in this field.

Robinson
Neutral Axis
Shock Suspension

ROBINSON AVIATION, INC.

730 Fifth Avenue • New York 19, N. Y.

Trainer Cutbacks Clear Way For Latest Model Warplanes

OWI explains curtailments in non-combat aircraft and obsolete models; record backlogs announced by leading aircraft manufacturing companies.

By SCOTT HERSHEY

Significant trends in aircraft production are disclosed in the statement of the Office of War Information on curtailments of war output, based on data from the Navy, Army and War Production Board, including cutbacks in non-combat aircraft and greatly increased emphasis on bombers.

Navy has projected plans for plane production into 1943. Reporting on its principal cutbacks during the past six months, the Navy included "aircraft—\$25,000,000 comprising trainers, transports, lighter-than-air craft, gliders, outboard patrol bombers and scout observation planes."

Clear Production Lines—Cutbacks in naval aircraft, it was explained,

are simply a limitation of non-combat and outboard combat types to clear production lines for more advanced fighters and bombers — a trend also shared by the Army.

The report noted that almost complete elimination of the Navy glider program resulted "from the fact that these craft have proved to be unsatisfactory weapons from the standpoint of Navy strategy."

Fighter-Bomber Expansion — At the same time that certain types of naval aircraft are being cut back, heavy expansion in fighter and bomber output is projected for 1944 — an increase of 60 percent over 1943, reaching a total of \$4,000,000,000 by the end of the year.

The Navy said the dollar volume

increase in planes and ship construction for 1944 is exactly the same—\$1,500,000,000 for each.

A comparison of current estimates for the 1943 and 1944 plane programs shows that for 1943, it was 2.5 billion dollars and in 1944 is 4 billion.

Cutbacks—In a recent statement on Army cutbacks, the War Department, foreseeing no immediate reduction in production, said its broad program for 1944 would be larger than in the past year. The Army program, of course, emphasizes bombers, particularly the heavy, and like the Navy will cut back on trainers and some other non-combat and outboard types.

A triple requirement for high-priority production indicates the importance attached to the air program for 1944.

Backlogs—Meanwhile, in the aircraft manufacturing, peak production in 1943 and record backlogs of orders for 1944 were announced by leading companies in the airplane, engine, and propeller and parts divisions.

Douglas—Current backlog of war orders at Douglas Aircraft totals \$3,000,000,000, largest in company history and fourth largest in the nation, with the company starting 1944 with commitments calling for increases of 55.4 percent beyond 1943's record figures.

The announcement said Douglas delivered \$6,446,000 pounds of naval planes valued at \$1,001,000,000 last year, reduced direct man-hours



CUTAWAY SHOWS "FORTRESS" CREW IN ACTION:

A Boeing artist depicts flying Fortness in action in the South Pacific. In the case, the bombardier is releasing bombs and the navigator and engineer are busy with their "Afters." The pilot is shown watching for enemy planes; the co-pilot is to his right. Top turret gun, manned by another engineer, are primed for ac-

tion; next come the bow's rocket and then another top gun operated by the first radio man. Second radio operator uses the ball turret against underwater attacks. Two waist gunners, also radio operators and engineers, deal death with 50 caliber machine guns. Behind tail wheel is the tail gunner, with his twin Jaws,

L.M. PERSONS CORPORATION
SAINT LOUIS 10, MISSOURI

• PRESSURE SWITCH
Type No. 103

• AIR SPEED SWITCH
Type No. 110

• AIR RAM SWITCH
Type No. 117C-45

• SOLENOID VALVE
Type No. 110

• SOLENOID VALVE
Type No. 100C-25

• SOLENOID VALVE
Type No. 120

• ALTITUDE COMPENSATED
PRESSURE SWITCH
Type No. 110

• PRESSURE SWITCH
Type No. 101

• TEMPERATURE SWITCH
Type No. 105

Shown here are typical L.M. Persons products. Catalog covering complete line available upon request.

Vacuum tubes and the post-war air war...

The pattern of post-war, world-wide air transport lines is being drawn today. Its development and progress has been tremendously speeded up under the forced draft of wartime necessity. No one can doubt the practicability of such a transport system today.

The genius of aeronautical engineering, the courage and skill of the pilots and crews and the amazing efficiency of electron vacuum tubes are blending these new truths through the skies.

It's vacuum tubes in the ground stations that provide dependable communications. It's vacuum tubes in radio beacons

that keep the planes on course. It's vacuum tubes in instrument landing devices that bring the transport to rest on terra firma through rough, dense weather... and it's vacuum tubes in other new secret electronic devices which make air travel safe and dependable.

Electron tubes are the dominant leader in the field of air transportation. Long years of successful experience, thousands of hours of dependable service have made them first choice of the leading engineers throughout the world... first choice of all the major airlines.

Follow the leaders in

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TUBES



Eitel-McCullough, Inc., SAN BRUNO, CALIFORNIA

Plants located at San Bruno, California and San Jose City, Calif.

Export Agency

PEACOR & HANSEN - 1st Clay Street - San Francisco, California, U.S.A.

per plane unit more than 88 percent since some industries as much as 11 percent, lowered post-war costs to the military to an over-all 33 percent and paid out more than \$30,000,000 in taxes to federal, state and local governments.

► **Top 1942 Figure**—The output exceeded 1942's production by 204 percent and was approximately 100 times Douglas' pre-Pearl Harbor production rate.

Most vital contribution of the company to the war effort was Douglas' production of heavy bombers—the company builds both Flying Fortress and Liberator under license from Boeing and Consolidated.

The report touched briefly on two new Douglas warplanes now in production, the A-26 fighter-bomber and a recently designed dive-bomber, and characterized them as of extraordinary promise.

Douglas employment, now up 40,000 over Jan. 1, 1942, hit a peak last August of nearly 100,000. Schedules call for a pronounced upswing next month in a new midsummer peak of close to 200,000.

► **Parkland**—Production volume of Packard Motor Car Co. will touch \$500,000,000 in 1944, the company reports. A new plant has been added at Toledo but even this has not met demands, and the company has turned over the necessary engineering and preparatory shop information to another engine builder. Company estimates its 1943 business on Rolls-Royce, Bristol and Packard marine engines at \$355,000,000, which is three and one-half times greater than the company's biggest car production year.

► **Boech Aircraft Corp.**—Building of Boech Aircraft Corp. exceeds \$250,000,000, and will require capacity operation for at least two years, the company revealed.

Aluminum at the plant from all sources, including aluminum, was reported about half of the average for the aircraft industry as a whole in 1942. Compiled from some 60 major aircraft producers.

► **Boech Aircraft Corp.**—Boech said records of shortages during the year show that, as terms of the ten-hour work day, time lost at Boech from improper or AWDL absenteeism amounted to less than a minute, in other words, not more than one out of every 1,000 went AWOL on an average workday during the year.

An increase of 227 percent was reported in number of Boechcrafts delivered to the armed services during 1945, compared 1943 and 1942 production rates based on the fiscal year ended Sept. 30.



FIELD KIT FOR AIRCRAFT RADIO LOOPS:

An aircraft radio loop repair kit, designed for use at the front or rear plane in the air with less interruption for servicing has been developed by Jack Heccewell, Bendix Radio division, is now true test in shipping damaged loops back to the factory. Aircraft radio loop held in single field and part disassembled prior to repair is shown in photograph.

Acrona Norsemen

Acrona Aircraft's Middle-town, Ohio, plant is tooling up on a new contract to produce a U.S. version of the well-known single-engine transport, the Norseman Norseman.

The work is considered as a wartime project and it is expected that the company will enter the feeder plane or light transport field immediately after the war. Even the small Acrona cargo plane announced last year is being delivered indefinitely. Mass production of lightplanes is still Acrona's objective for postwar.

► **Glenn L. Martin**—Dollars volume of aircraft production by Glenn L. Martin Co. will approximate one billion in 1944, compared with \$880,000,000 last year and \$357,000,000 in 1942.

To meet increased production demands, including those involved in the building of 20 Mars-type flying boats for the Navy, Martin said between 2,000 and 6,000 additional workers would have to be hired between now and late spring.

Martin said some of the contracts contributing to the total have not been disclosed. The 70-ton Mars is now in operation by the Naval Air Transport Service, and under the new contract the first new boat probably will be delivered in about a year.

► **Studebaker**—Cumulative output by Studebaker Corp. of Wright Cyclone aircraft engines has reached 29,810 units, with 1943 production of 32,000 power plants for Flying Fortresses.

Company announced production of three and one-half times as many Wright engines last year as were built by the company in 1942. Production has been holding steady for several weeks and November was cited as an example when the company shipped enough engines to equip more than half of the announced production of American four-engine bombers of all types.

Company operates parts plants in Fort Wayne, Ind., and Chicago, in addition to the assembly factory at South Bend.

New Rectifier

A new rectifier, heavy enough to operate heavy-duty aircraft power circuits, is announced by Argonne Manufacturing and Supply Corp., North Hollywood, Calif. The company said the extra heavy inrush current required can be delivered while ample voltage is maintained to prevent drop-out of turret relays and that the "two-way" rectifier is within the safe limit of any delicate electronic device or other electrical equipment in a plane. The rectifying element is of the self-healing dry dust in moisture-copper sulphate type. No bipolar tubes are created. The bridge circuit is entirely insulated from the primary.

Spin-Resistant Models Studied For Post-War Private Plane Market

Aircraft engineers work on wing design with view to minimizing danger of loss of control following stall.

Aircraft engineers looking to the post-war personal plane market, cognizant of the fact that the primary form of loss of control and stability is the stall, followed by the spin, expect almost immediate responsiveness in the form of spin-proof or spin-resistant designs, many of which were well under way in the immediate pre-war period.

William D. Hall, chief engineer, Allison Aircraft Corp., believes the two-spanning characteristics will be accomplished through a design of the wing proper so that it stalls gradually with the stall originating over the center portion of the wing and the ailerons used will not stall the remainder of the wing when they are deflected to obtain lateral control. Further longitudinal control will be limited, he believes, so that it will be impossible to place the airplane in a complete stall position without a dive and a violent pull-up.

Hall Warning—He also sees an automatic warning of the impending stall, in the form of tail buffeting, or perhaps an instrument on the dash board for the benefit of the individual who might become careless. Hall's remarks in this connection

were made in a paper prepared for the War Engineering Annual Meeting of the Society of Automotive Engineers, at Detroit last week.

Wider Market Seen—Reasonably soon after the war, Hall says, the individual will have a choice of aircraft for his private use which will be vastly superior to that to which he has been accustomed in the past. While immediate wartime developments have not been concerned primarily with private type aircraft, the rate at which the aircraft industry has progressed has brought to light many improvements which will be applied to private airplanes.

These developments, Hall says, together with those occurring naturally in a field with intense competition—most aviation leaders feel that the private plane post-war competition will be terrific—will be bound to result in a number of excellent models from which the public can choose.

Helicopters—Hall believes the immediate post-war market will be supplied with ships which are identical to, or slightly modified from, those offered in 1940 and early 1941. Discussing the fixed wing and re-

tracting wing type and noting the publicity given recent advances of the helicopter, Hall says he believes they (helicopters) "are still a long way from offering the best compromise from the standpoint of the private owner, and that the fixed wing type will dominate the immediate future."

Safety Devices—Hall discussed safety factors of post-war private planes, performance, dependability, comfort and cost. He suggested:

▶ A low-powered, inexpensive training type aircraft, with either tandem or side-by-side seating arrangement, which will be a refined version of the pre-war light models to sell at approximately \$1,500.

▶ A medium priced, medium performance type which will be safe, and named at the private owner, available in two-, four- or five-place models to list at about \$1,500 up to \$2,500 for the larger models.

▶ An aircraft combining as high performance as is consistent with reasonable safety, comfort and cost, available at around \$2,500. This aircraft, Hall explains, will be a clean-up version of the pre-war, two-place side-by-side, low wing, retractable-gear type and offered to persons who will demand maximum performance.

New Fleet Plane

Canadian plane wars work on unnamed combat craft.

Fleet Aircraft Ltd., of Fort Erie, Ont., has started production of an unnamed combat plane to offset reduced output of Fleet Cornell trainers. Present payroll will be maintained.

Officials squelched rumors of a large layout early this year or that the company would cease to be under government supervision. Currently, Canada produces four combat planes—Lockheed and Mustang bombers, Corsairs, and Curtiss Helldivers. Fleet has made mainly single engine trainers and light craft, and a two-engine bush freighter.

Magnetic Inspection

Ford aircraft engine plant reports process checks X-rays.

Magnetic particle inspection, which finds both surface and subsurface flaws, has been used to decided advantage by Ford Motor Co. particularly in connection with the manufacture of parts for B-24 Liberator. (Turn to page 25)

THE ENGINE THAT IS ALWAYS THERE

Allison-powered planes have been called upon in every major engagement in which our Army has taken part. ★ They have had a hand in every great land victory to our credit. ★ Allison engines always—for dependability and brilliant performance!



Early Landing Allisons
ORIGINAL MODEL UNIVERSITY OF THE AIR
VSC Model

LIQUID-COOLED AIRCRAFT ENGINES

Allison
DIVISION OF
GENERAL MOTORS

POWERED BY ALLISON

F-3—Douglas P-33—Douglas P-33—Waco A-33 and P-33—Mustang

★
KEEP AMERICA STRONG
BUY MORE WAR BONDS



GOODYEAR WORKERS BEAT "QUOTA SHIP" SCHEDULE

Part of the crowd of Goodyear Aircraft workers as they celebrated completion of their December "Quota Ship," a Navy Corsair fighting plane, twelve hours ahead of schedule. A recent issue of Aviation News told of the Navy's new employee morale program involving a "quota ship" campaign, in which Goodyear production workers racing against time to get a particular plane, and all others ahead of it on the assembly line, delivered to the Navy by the end of the month.

Trail Blazing in the Skies

PIONEERING NEW METHODS



HOW GOODYEAR AIRCRAFT CORPORATION SERVES THE AIRCRAFT INDUSTRY

1. By constructing sub-assemblies to manufacturers' specifications.
2. By designing parts for all types of airplanes.
3. By re-engineering parts for mass production.
4. By extending our research facilities to aid the solution of any design or engineering problem.
5. By building complete airplanes and airships.

THE RAPID-HEATING EXPLOSIVE RIVET GUN

is a new Goodyear Aircraft development that greatly simplifies and shortens the work of setting explosive-type rivets. Lighter and easier to handle, it can be used on surfaces heretofore inaccessible with other equipment, speeding up production.

BUILDING PROVEN AIRCRAFT



THE FAMOUS MARTIN B-26 MARAUDER

is equipped with major flight control surfaces, subassembled by Goodyear Aircraft. Since pioneer days Goodyear has been privileged to furnish Martin with many parts and accessories, and is one of its principal wartime suppliers.



erator bushes and Pratt & Whitney aircraft engines.

Food engineers say the method is more revealing than X-ray, yet requires much simpler equipment. They point out that magnetic particle inspection is a non-destructive test and that the piece tested need not be destroyed to determine its suitability for intended use.

Theory — They explain that the theory of magnetic particle inspection is simple and based on the fact that a piece of steel may be magnetized by passing a current of electricity through it or around it. This tends to magnetize more highly the areas where there are flaws.

Westinghouse Studies Reconversion Outlook

President Bucher minimizes changes necessary for shift to peacetime operations.

George H. Bucher, president of Westinghouse Electric and Manufacturing Co., in a year-end statement, says that notwithstanding the rising tempo of production, time has been found to survey the needs of the company in the post-war period "which seems to be approaching with certainty," and adds that his company will not require a major amount of reconversion.

He explains this by saying that it has been manufacturing in many of its plants the same type of products it manufactured in peacetime, the only difference being in volume and maximum use of facilities.



AAF DEVELOPS GUNNERY TRAINING DEVICES

Two of the Army Air Forces' latest machines to test gunnery students are shown in these official Air Service Command photos from Patterson Field. On left is a deflection trainer utilizing pendulum machine character-

Appliances Division—Major reconversion expense, he says, will take place in the Electric Appliances division, where all normal activity has ceased and adds that "reconversions of all our plants to peacetime products should be accomplished in a matter of months."

Notwithstanding the fact that in the first nine months of 1943 we manufactured and shipped more appliances than we did in the entire twelve months of 1942," Bucher reports, "our backlog of unfilled orders still continues to be over a billion dollars, if all the plants under our management are included. This is the highest figure it has ever attained."

New Helicopter

Aggaszafal Products, Inc., now manufacturing precision parts for warplane makers at its Detroit and Washington Court House, Ohio, plants has a prototype helicopter which C. C. Layman, Vice-president, says has been tested and found satisfactory. Layman and plans are under way for production of the craft in both plants immediately following cessation of hostilities. The firm established its Ohio plant about two years ago when need for expansion was seen at Detroit.

More "Lancasters"

Production at Victory Aircraft, Ltd., Toronto, government-owned factory making four-engine Lancaster bombers, is expected to be speeded up.



units. The tuning target simulates a plane in flight. Frequent score flashes on its lights with each hit. On right is another deflection trainer, using reactor. Student fires at planes flash by.

Large numbers of workers are being transferred from a recently-closed explosive plant nearby to the Victory facilities, and announcements on Toronto radio stations asking for volunteers for 1,000 new Victory aircraft workers went on the air. Requests were made at the same time for room for additional thousands of employees needed in the next few months.

New Gunnery School Devices Used by AAF

Specialists will maintain machines at twelve Air Service Command centers.

New intricate gunnery training equipment for aerial gunners of the Army Air Forces is being installed at twelve major Air Service Command centers.

The parallax trainer is used to teach novice turret gunners how to shoot down attacking enemy planes. The reflexless trainer is used as gauging range. A deflection trainer teaches a gunnery student to lead a plane in his sights and compensate for speed differences. Knowledge of the operation and maintenance of the training devices includes use of gasoline pictures, electronics, amplification and sound reproduction.

The deflection trainer, most spectacular, records the trainee's score in red lights, like a gambler's machine, every time he scores a hit on a trailing, elusive model plane target, or on a plane shown on a motion picture screen.



STAR STANDARD radio plane shows precise pointing ability.



REFLEXLESS trainer shows precise aiming.



FLIGHT S-T model—Advanced primary trainer—deflection trainer wing type.



RYAN S-C gunnery trainer for parallax trainer use, features 36 radial air streamers.



J-1 deflection trainer—Advanced primary trainer—deflection trainer wing type.



RYAN T-10 gunnery trainer—Advanced primary trainer—deflection trainer wing type.



RYAN H-10 gunnery trainer—Advanced primary trainer—deflection trainer wing type.

The Ad Customers Wrote for Us

Advertising slogans are often created by advertising men, instead of by the reputation of the products they describe. In contrast, the slogan "Ryan Builds Well" was inspired by the proven record of excellent performance and low maintenance of Ryan planes.

A SLOGAN THAT PROVES ITSELF

The head of a War Training Service flying school in the Southwest writes from a plane at which Navy pilots are being trained: "As a trainer the Ryan S-T is tops. Maintenance is phenomenally low. Our S-T's have demonstrated they can take the exceptional abuse of flight training programs. . . . We regard it as the finest intermediate or secondary trainer we have ever used. . . . Many fighter pilots flying off courses today can mutually say they owe a lot to these silver beauties."

Another, the head of large scale training operations in Texas, writes: ". . . they have continued to be the most satisfactory secondary trainer we have ever used. . . . Their maintenance definitely outstanding. . . . We have never received better service from any company. . . . I believe the high quality of our students has been to a large degree directly attributable to their training in these Ryans. . . . I am keeping one especially for my own use and for pilot checking purposes."

BUILDING WELL FOR UNCLE SAM

Ryan's current activities include the engineering, development and manufacture of the most advanced type combat airplanes and important assemblies for the armed services. Publication of detailed information on these is, of course, restricted.

RYAN

Rely on Ryan to Build Well



PERSONNEL

William M. McAvoy chief test pilot of the National Advisory Committee for Aeronautics, has been selected to receive the *Oscar Chawla Award* for 1943. This award is given annually for a reliable contribution to aeronautical science made by a pilot. McAvoy will receive it "in continuation

Standard Propeller division of United Aircraft Corp. at Wright Field, as materials manager of the division has been announced. He will be succeeded by Alan G. Day, former chief engineer of Canadian Propeller Ltd., at Montreal.

Gus S. Green has been appointed flight operations manager at Consolidated Valco's Fort Worth plant, replacing the late Gus Dan Green who has been chief instructor at American Flyers, a sports instrument school at Ft. Worth.

H. L. Howard, formerly chief accountant at the Dallas plant of North American Aviation Corp., has been appointed division comptroller of the Texas division.

Erig. Gen. Donald F. Stone has been promoted from the rank of colonel. Gen. Stone is Western District supervisor, AAF Materiel Command.

H. W. Anderson, now staff assistant to G. E. Barton, Ryan Aeronautical Co. factory manager,



has had 29 years of experience in nearly every phase of aviation. He was a major aboard for the 30th Aero Squadron in World War I, a lieutenant with the 48th Flying Circus, a mechanic for Wright Aircraft Co., South American representative for Atlantic Aircraft Co., in charge of

NEW AAF SAFETY CHIEF:

Col. George C. Price and the men of his office are working to keep up the record Gen. H. H. Arnold announced in his recent annual report. At the end of the fiscal year, June 30, 1943, the rate of accidents per 1,000 hours flown by AAF was reduced from 0.730 to 0.714.

engine installations for Glenn L. Martin Co. and, recently, before joining Ryan, general manager of B-24 plant assembly for Consolidated Valco Aircraft Corp.

Personnel changes announced by Transportation Air Lines include promotion of three city traffic managers to district traffic managers. The men are R. R. Campbell, Ottawa, Ill.; S. H. McLean, Edmonton, and J. A. Robinson, Vancouver. Other TCA



changes: **Steele L. Shaw**, traffic representative in charge of the Windsor, Ont., office, promoted to city traffic manager; **David E. Goss**, traffic representative, Montreal, transferred to Montreal as traffic representative, his new job to include supervision of TCA traffic functions in Newfoundland; **C. R. Hawkins**, traffic representative, transferred from Newfoundland to Winnipeg; **Alan R. Goldfarb**, traffic representative, Winnipeg, transferred to Montreal.

Joe R. Kinner has been named employment manager at the Memphis division of McDonnell Aircraft Corp. in charge of the personnel department. **Ed Norris** is personnel service supervisor for Memphis.

Frederic J. Curtis has been elected vice-president of Monaca Chemical Co., in charge of the long range program of development here and abroad.

Gwynne Shaw, former industrial engineer for Douglas Aircraft Co., has been appointed district traffic manager for Western Air Lines at Long Beach, Calif. He'll replace the long Black Junior Chamberlain of Coast Airlines but will have no say in the company's general affairs in San Diego, Calif.



Capt. Merion E. Cise, who was for 12 months commander of naval aircraft at the Curtiss-Wright plant, Columbus, Ohio, has assumed command of the new aircraft carrier USS *Salamander*. He was succeeded at Columbus by **Capt. John W. C. Broad.**

Mr. Gus H. E. Oldfield has been assigned as special assistant to Gen. H. H. Arnold for anti-aircraft. He will keep Arnold informed on all anti-aircraft matters affecting the Army Air Forces, and will have under him supervision anti-aircraft tactics, personnel, material and training for the AAF. He has assumed duties formerly in the office of the Assistant Chief of Air Staff, Operations, Communications and Requirements.

J. E. L'Assas formerly executive assistant to the vice-president in charge of operations of Consolidated Valco Aircraft Corp., has joined the Sylvania Manufacturing Co., as works manager. He has made the following personnel changes: **Donald W. Van** became general superintendent; **Ernest S. Chelone**, production manager; **Glen M. Talbot**, superintendent-in-charge of assembly; **Armen E. Black**, superintendent-in-charge fabrication; **Charles F. Shaw**, supervisor of new stock and purchased

parts; **Alvin A. London**, inventory manufactured material stock; and **Malvin D. Moore**, acting chief industrial engineer.

E. G. Miles, formerly with the New York Central Railroad in Buffalo, N. Y., has become traffic representative for Pennsylvania-Central Airlines in Detroit.

Lt. Col. William M. Hoden, USMC (Aviator), has reported for duty in Washington, Airframe, Marine Corps. Deputy Chief of Naval Operations in Air.

Robert Burdick was general counsel of the National Labor Relations Board, with headquarters at Washington, has resigned to join the New York law firm of Smith, Hale and Cramer, general counsel for Consolidated Valco Aircraft Corp. Mr. Witt will head Consolidated Valco's general affairs in San Diego, Calif.

A new wing command, known as Naval Air Ferry Command, has been established under Naval Air Transport Service with field headquarters at Naval Air Station, Floyd Bennett Field, Brooklyn. **Capt. John W. King (Naval Aviator)**, formerly attached to the office of the Ferry Service Command in the division of Naval Air Transport Service, directs the new command.



POSTHUMOUS OSM AWARDED TO OUF POINT:

Gen. M. H. Arnold, Commanding General, AAF, presents the Distinguished Service Medal as a posthumous award to the family of Richard C. duPont, outstanding glider expert and authority, who was killed Sept. 11, 1943, in an accident, involving an experimental glider. Left to right, Gen. Arnold, Mrs. Richard C. duPont, widow of the late, Richard C. duPont, Jr., son, and A. F. duPont, his father.

John A. Seabert, for the past several years vice-president of Pennsylvania Barber Co., Jonestown, Pa., has been named president of the Eastman Kodak Co., New Haven, Conn. The appointment was effective Feb. 1. The Eastman Corp., which was formed by the consolidation of Eastman Kodak Corp. and Alford Corp., manufacturers of negative, film, negative processing equipment, and various electronic assemblies for aviation, automotive, marine and industrial internal combustion engines.

Fluid Bacon has been named assistant to Arthur Flood, commander of the Turboprop Aircraft division at Hagerstown, Md.

A liaison desk for ferry operations has been established at the Navy Dept. under Lt. Col. H. H. Hays.

Capt. James Graham, a veteran of ten years with Pennsylvania-Central Airlines, has returned from a recent operation in Alaska where he served as chief pilot for about 15 PCA crews under the Air Transport Command. **Capt. Graham** was on a cargo project that started in Edmonton, Canada, and made a landing in Alaska.



service in the flight testing of experimental airplanes under hazardous conditions required in experimental research. Award will be made at the Hoversight Dinner of the Institute, Jan. 24 at the Waldorf-Astoria Hotel in New York. McAvoy has been with the NACA since 1935 and is now chief test pilot of the Ames Aeronautical Laboratory, Moffett Field, Calif. The award honors the memory of the Aviation engineer, *Oscar Chawla*, who died in 1916. He was a pioneer in research and served as adviser to the Wright brothers in their early work.

Harry Moore, former purchasing agent for Consolidated Valco Aircraft Corp., has been named chief of material of the Mining division, **Marion C. McLean**, former assistant division treasurer, has become the division treasurer.

Donald Webb has joined Kinner Motors, Inc., as executive assistant, Development and Research. Webb has been with Adolf Precision Products Corp.

Donald L. Wolke, formerly acting general manager of Sikorsky Aircraft, has just been named general manager of the Sikorsky division of United Aircraft Corp.

Appointment of **Samuel F. Cripe**, formerly representative for Hamilton



UNITED AIRCRAFT VETERAN HONORED:

The chairman and president of United Aircraft Corp., were on hand to present a 15-year glow to **Joseph F. McCarthy**, the company's controller, who has been chief financial official since the company's organization in 1934. For five years previously, he was in the same capacity for United Aircraft & Transport, predecessor organization. Left to right: **Frederick B. Renshaw**, chairman, McCarthy and **H. Mansfield Horner**, president.

Load Capacity of U.S. Planes Increased



This is an enlarged photograph
of one of the famous BOOTS
ALL-METAL SELF-LOCKING NUTS
(ANCHOR STYLE)

*by Over a
Million Pounds—*

thanks to this all-metal self-locking nut.
All types of U. S. Aircraft—

"Fly With Their Boots On"—LIGHTER

BOOTS
SELF-LOCKING NUTS
"OUTLAST THE PLANE"

BOOTS AIRCRAFT NUT CORPORATION, GENERAL OFFICES, BOOTS PARK, NEW CANAAN, CONN.

CAA Air Traffic Control Division Outlines Post-War Regulations

Group maps plans to meet expected large scale expansion of private flying after return to peacetime operations.

By MERLIN MICKEL

While manufacturers eye the postwar possibilities for private plane sales, and city officials and airport managers are conferring on landing field expansion problems, the Air Traffic Control division of the Civil Aeronautics Administration is busy ahead quietly with its own plans to cope with any air traffic increase the early post-war years may bring.

As early as last July, these matters were receiving serious attention. They were considered then in the air traffic control and communications conference of the CAA at Chicago, and since that time studies along these lines have been underway in as the division struggles with mounting duties due to heavy traffic growth during the war.

Conclusions—Some of the tentative conclusions reached by heads of the section are significant in view of the variety of problems of post-war traffic from other sources.

These expectations is that 1950 will see 1,000 to 9,000 commercial planes flying the nation's airways, in addition to 50,000 military aircraft. But more of a problem will be the 44,000 private planes they expect to be in operation at that time.

The division is planning that far on the assumption that the up to 9,000 commercial planes will be conventional craft with automatic air traffic control equipment. War-time, however, means the men keeping ahead of traffic control problems, will bring a degree of commercial flying safety undreamed of in pre-war years. Development of collision warning devices, radar adaptations to show pilots their distances from ground objects, and other devices, many of them still military secrets, will be factors.

Traffic Control—The major air traffic control problems, it is expected, will turn up in relation to conventional aircraft with a mini-

mum of control equipment, or with none at all. This latter group, including the majority of private planes, probably will constitute about 90 percent of the problem group, while planes with minimum control equipment will be an estimated 10 percent.

The division's attitude on the helicopter is interesting. "We are not too concerned about the helicopter," says Glen A. Gilbert, division chief. "We think from the standpoint of traffic control problems it will closely approach the automobile."

Helicopter—This doesn't mean that Meyer La Guardia is right when he says the New York police department will have to regulate traffic over the city in the first two years after the war. It does mean that Air Traffic Control at CAA anticipates that ships of this type will fly "contact" at low altitudes, following such natural landmarks as highways and rivers. Equipment for blind flying, a "meat" in the fully equipped conventional plane, would be unnecessary in the average helicopter, which could reduce its speed as visibility lessened, or land without an airport if bad weather closed in. Helicopters probably will do more cross country flying, too, off the regular airways.

The division heads emphasize a desire to keep air traffic control regulations as simple as possible, as they affect all types of flying.

"We don't want to control everybody," is the way Gilbert puts it. "In fact, we don't want to control anybody, except as it is necessary for the public safety and convenience."



PANELS FIBERGLASS for aircraft, new Martin production-line construction, available immediately by its less costly, 10,000 other factories. This, and other uses of Fiberglas, mean big savings in weight and money for aircraft operators.



FLYER EFFICIENT, take maintenance and equipment outside. Martin engines to record graphically a pilot's flight characteristics. The observations will aid efficiency in conducting operations.



LIAR, PROOF FUEL TANKS, America's first super developed by Martin are now standard equipment on many models of U. S. aircraft. Martin experiments on will include fuel tanks from 100 to 1000 gallons, 200 horsepower were tested.

"FIRSTS" for Peace • "FIRSTS" for War

From Martin Research Laboratories!



ALL-PLASTIC NOSE, every bombardier will welcome this new Martin innovation, now used on many U. S. service. Plastic glass research goes back to 1915. Today some Martin glass covers 400 plastic parts.

ON this page are pictured just a few of the Martin firms which help make U. S. aircraft second to none. Other Martin developments are still cloaked in military secrecy, while numerous others, individually minor but collectively important, are in use throughout the aviation industry to give America better planes and more of them. Vital to victory today, these Martin firms will play outstanding peacetime roles tomorrow, not only in aviation, but in scores of diverse industrial fields. Post-war products of every sort may bear the words "Made by Martin" as a guarantee of excellence.

The GLENN L. MARTIN COMPANY, BALTIMORE, MARYLAND, U. S. A.
See Glenn L. Martin — National Company — Chicago

Martin
AIRCRAFT

Builder of Dependability — Through June 1949



SKIN SHINER, advanced product of Martin engineering, keeps the aluminum skin of a plane strong yet thin after meeting its crash and impact loads, into place without reflecting or buckling.



NEW DELICIOUS-LOOKING CRUISE SHIP, (below) is used by Martin engineers, production plant working in cold weather. After Victory the Martin system will be available for coast-guard patrol craft, motor, launch, private automobiles.



POWER TURBINE like this (above) developed and manufactured by Martin are the standard on many types of U. S. aircraft. America's first post-war product was used on the Navy's "Mighty" PB-6A piston bomber back in 1937.



WILHELMINA REWARDS PAN AMERICAN CREW:

The Pan American Airways flight crew on the Clipper that carried Queen Wilhelmina from the east coast to the British Isles last summer has received honors from the Netherlands royal general, at the Queen's behest. At the presentation in New York, they were (left to right) Edward H. Gurnea, first steward, Stuart H. Robinson, navigator, Thomas H. Prichard, Jr., third officer, E.

Elmer Schuman, the coastal general, John C. Leslie, Atlantic division manager for P.A.A., William Van Vels, private secretary to Princess Juliana, Clarke B. Windham, fourth officer, Edwin E. Brown, assistant engineer, Verne Edwards, second steward and Milton Edner, radio officer. Six other crewmen were unable to be present.

AA Reports on Burma Road of Air And Alaska Operations With ATC

Line has grown to second largest international air transportation company in world as result of ATC contract, company claims.

With the observation that it has grown to be the second largest international air transportation company in the world, American Airlines last week described its operations for the Air Transport Command, particularly by those over the "Burma Road of the Air" between India and China.

This latest contribution to the story of what the airlines are doing for the ATC tells of crews that have flown supplies into China from an Indian base since last August, on the Consolidated C-47's assigned to that operation, flying over the Himalayas mountains and landing on runways as isolated that troops occasionally had to clear them of water buffalo and Brahmin cows.

Spectacular—The Burma and Alaska work was described by American as the two "most spectacular" of its operations in 18 months since ATC contract, which all together add up to 150 trans-Atlantic flights a month—4,300 overseas flights by the end of 1945—and operations by its crews to every continent in the world, 27 countries outside North America and 90 cities outside the

United States, among them, none Alaska and one Canadian destinations. American feels that this record is exceeded only by Pan American Airways.

India and Alaska work done by American has been turned over to the Army, but again flights for the ATC continue. Special missions have added to regular assignments. An American crew, in April last year, used a C-54 A on the first survey flight across the Atlantic from Newfoundland direct to Marrakech, French Morocco. These are the men, incidentally, who received the Air Medal from Gen. H. L. George, ATC chief, last month. An AA crew also was in the first C-54 to fly the Pacific, with cargo aircraft parts for New Guinea bases.

Burma Operation—On the Burma operation, American explains that the ATC took a group of its crews for the week July 20, 1943. First of the C-47's arrived at the India base in August. All made successful flights from New York, loaded with war material. The next four months saw 1,015 crossings between India

and China, and American says it is the only commercial air transport company, except for the China National Air Lines, to operate a route entirely within a combat zone.

Operations began on moonless, foggy nights, and instrument flights were frequent, but the average was almost one trip a day at the height of operations. To Dec. 1, AA carried nearly five million pounds of cargo to China, from a base hardly 80 miles from the nearest Jap air base.

Alaska—The Alaska job was in the summer of 1942, when American and other airlines flew converted DC-3's with the armament, machine guns, machine parts, food and other recognized air cargo items, plus things such as barrels of gasoline and oil, lumber and nails, and other items generally reserved for marine carriers.

CAA Reveals its Role In Radio Shuffle

Furnished AAF with raised personnel for shift to longwave 3600.

Civil Aeronautics Administration wants it known that it has more than casual interest in new radio installations to aid the ferrying of aircraft across the North Atlantic pole.

In the new setup, long-wave communication replaced short-wave to avoid interference by magnetic storms in weather reporting and air navigation facilities on the ferry route to Great Britain. The War Department announced the change two weeks ago.

Personnel Trained—Called on by the AAF in August, 1942, CAA says it gathered trained personnel from the field in all areas of its domestic regions, assigned 23 civil and radio engineers to projects in Canada, Labrador, Greenland, Iceland and the United Kingdom. With these civilian engineers supervising the work, helped by available military working crews, seven projects were finished early in 1943, and ten remaining last August.

Included were high and low frequency communication circuits. Also ground control tower circuits were installed at several of the projects. At 13, radio range navigational aids were provided, and at five of these the CAA made equipment available, it reveals, for dismantling domestic facilities and transferring them for reinstallation in foreign locations.



Mobile Control Tower Tests—The Civil Aeronautics Administration's new traffic control tower on wheels received its first tryout at Washington National Airport last week. The tower now goes to Windsor, Ariz.,

at request of the Army Air Forces, for use pending installation of a stationary tower. At the microphone is W. H. Pearce, Washington airport traffic controller, who participated in the mobile control tower tests.

Traffic Tower Sent To Arizona Field

Mobile unit built by CAA to serve at Windsor all permanent structure is erected.

First assignment for the new mobile airport traffic control tower completed recently by the Civil Aeronautics Administration and the Army is at Windsor, Ariz., where it will operate with a regular stationary tower in a few hours.

This announcement by CAA meant that the tower had successfully passed its preliminary tests and was ready for an actual tryout in the field. The traffic tower on wheels was demonstrated last week at Washington National Airport, before Army, Navy and Airline officials.

Built By CAA—The machine was built by CAA's Air Traffic Control division, in cooperation with Army's Engineering and Signal divisions, for use where a tower is needed before a permanent installation can be made. CAA says there is a possibility similar units may be used with advance forces on the war fronts, where mobility is a necessity.

Aside from its lack of height—operators use field planes to ascertain this—the facilities of the portable tower are the same as in the permanent. Flaps, lights and radio equipment are the same. Mounted on a truck chassis, the tower has an overall height of 14 feet, or 11 (if clear in underpasses) when the faired transparent top is

removed. Fixed towers are 60 to 80 feet high.

Uses D.C. Power—Radio on the mobile unit includes an intermediate frequency receiver, four very high frequency transmitters, a low frequency transmitter and a very high frequency transmitter. Commercial power of the unit's own power, from an engine generator, may be used. Equipment includes a portable traffic control light gun, time stamp, station altimeter, broadcast, testing unit, emergency hoses, drinking water and fire fighting equipment. If the power supply fails, the light gun may be operated from the truck battery as an emergency control. Two men can put the unit in operation in a few hours.

The mobile tower demonstrated at the Washington airport consisted of conversations with pilots at instrument places, on the regular tower's frequency, although the latter retained control of landings. At Windsor, where the wheeled unit is being sent at Army Air Force request, it will function until a regular tower can be built and equipped. Two men from CAA's Air Traffic Control division will go along.

WASP Safety Record

A new flying safety record has been established during the past year by the WASPs, whose current accident rate is 10 fatal accidents per 1,000 hours of flight. The rate in AAF flying is continental U. S., including unscheduled cockpit accidents, is now .80, War Dept. said.

The WASPs are now flying nearly 5,000,000 miles a month, including ferrying target-towing, carrier duty, training, testing and experimental work.

Since 1942, they have flown more than 36,000,000 miles.

Aviation Groups Urge Decision on Lea Bill

Meetings held in Washington with view to bringing pressure for showdown on measure.

By BLAINE STUBBLEFIELD

United action for a decision on the Lea Bill, H. R. 9430, was the objective of several aviation groups which began a series of meetings in Washington last week.

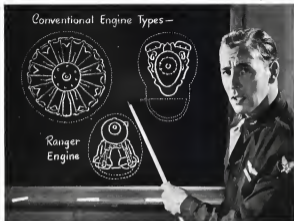
The bill is being put in the House Rules Committee, having been reported to the House by the Interstate and Foreign Commerce Committee. The Rules Committee must hold additional hearings before giving right-of-way to the bill. Hearings had not yet been scheduled at this writing.

Present—Groups represented at the meetings are the Air Transport Association, National Aviation Trades Association, Personal Aircraft Department of the Aeronautical Chamber of Commerce, the National Aeronautic Association, the National Association of State Aviation Officials, and the insurance group.

Civil Air Patrol declined to partic-



Shoulder Distress Signals—Pilots on the Burma Road route, like the three American Airlines fliers shown here conspiring their shoulder-arms, are "Burma Roadsters." Note the sleeve insignia of the China-Burma-India wing and the back identification of the bowser of the flag as a United States citizen who has none to aid China and needs conduct to the nearest friendly base, if in trouble.



Why Ranger Turns The Power Plant Upside Down

The Ranger Aircraft Engine is unique.

It is the only inverted, in-line, air-cooled engine in production today.

Fairchild engineers worked ten years developing and perfecting this outstanding inverted power plant. They sought a practical engine design that would:

1. Make flying safer by giving the pilot greater vision than is possible with conventional engines.
2. Increase efficiency of performance by reducing and streamlining the air-resisting frontal area.
3. Simplify the usually complex task of maintenance and daily inspection (a vital safety factor) through

easier access to the power plant of the airplane.

That the Ranger Engine fills the bill on these 3 vital counts . . . and on others, too . . . is attested by the fact that the U. S. Army Air Forces have chosen Ranger-powered planes, the famous Fairchild PT-19's and AT-21's, for the task of training quickly thousands of pilots and aerial gunners.

When Fairchild engineers turned aircraft engines upside down and produced the Ranger, they did it with an eye to safer, speedier, more efficient sky travel—another example of Fairchild's "touch of tomorrow" in the planes of today."

SEE U. S. WAR BONDS AND STAMPS

RANGER AIRCRAFT ENGINES

Division of Fairchild Engine and Airplane Corporation • Farmingdale, Long Island

topole on the ground that it is semi-military. Civil Aeronautics Administration and the Board, and Congressional officials were not involved as it was felt they could not help the various groups to decide.

Questions—Specifically the question before the meetings is whether they can agree to back the Lea bill as drafted, subject to amendment on the floor of the House and Senate, ask that the bill be recommended, or call for a new bill. The latter two cases amount to about the same thing and additional hearings would be necessary. It was assumed that the rules committee would report the bill open to amendment on the floor.

The opinion was expressed that in case of recommendation no legislation could be put through this session, which ends the 74th Congress, probably near the end of 1944. All pending legislation will expire with this Congress.

Solomon New Head Of Northeast Board

Collier elected president to succeed chairman of district.

Sam Solomon, president of Northeast Airlines, was elected chairman of the board last week. Paul F. Collier, of Boston, who has been a board member, was elected president, according to Solomon.

Solomon explained that it was becoming increasingly difficult to devote the necessary time to his various war and other activities without a permanent residence in Washington. In addition to his chairmanship of the Airlines Committee for U. S. Air Policy, he has been working up the affairs of the Airlines War Training Institute, which he headed. As chairman of Northeast's board, he will continue to give time to the broader questions of company policy.

Board Members Elected—Milton F. Anderson, operating vice president, and Robert F. Bradford were elected directors to fill vacancies caused by the resignation of Lawrence F. Whittenhouse and R. Danforth Starr. Whittenhouse was a railroad representative on the board, being assistant to the president of the Boston and Maine, which with the Maine Central recently reduced its holdings in Northeast to eliminate the question of control.

Robert S. Swain, vice president, treasurer and director, has dropped his treasurer duties, in which he will be succeeded by H. LeRoy Swann, former comptroller.



WING CONTROL LOCK:

J. Earl Steinhaver, assistant manager of Washington National airport, composed this simple control lock lever, whose thin metal post permits use on planes where crank between ailerons and wings is narrow. The Model is six size of the airport.

Discontinue—Members of the board now are Solomon, Collier, Swann, Anderson, David Howe, Radio Institute, James F. Fitzgerald, Roger L. Vakil, and Bradford, clerk.

DPC to Offer First Batch of Used Planes

From 1,200 to 1,500 expected to go on market in next few months.

The ink hadn't been dry long on OPA's formula for using plane price ceilings before the Civil Aeronautics Administration announced that some of the planes used by the CAA War

Training Service in its training program will be released for public sale.

The planes are owned by the Defense Plant Corp., but are surplus to the pilot training program because of War and Navy Department transfer of operational-type and light training planes, and other reasons.

1,200 Expected to Be Offered—That estimate was that the number to be put up for sale in the first batch would run under 1,000, but in the next couple of months would grow to around 1,200 or 1,500. Of the 7,388 planes in the program, the DPC owned 5,197 as of last Dec. 23. If the program goes out of business, all these probably will be made available to the public.

The OPA ceiling formula, applicable to used planes of not more than 500 hp., was that submitted to the Office of Price Administration by the CAA, and prepared the way for the sale. Agents for the DPC in determining what is surplus and carrying out the sale are R. McLean Stewart, executive director of training, John P. Morris, director of CAA War Training Service, and W. G. Stewart, assistant to Morris.

Cutbacks—A memorandum from the director to regional managers, explaining the disposal plans, stated that reduction in quotas at certain training centers and discontinuance of training elsewhere had contributed to the surplus. Several 65 hp. liaison planes have been made available to the service by the AAF, to replace DPC-owned 65, 65 or 60 hp. planes used in Army Flight indoctrination centers.

Some surplus will occur at secondary training centers through quota reduction or training termination. The same is true at certain



NEW PCA TICKET OFFICE:

Pennsylvania-Control Airlines' new ticket office, opened recently in the Field building in Chicago, offers the most complete service of any PCA has put in operation.

Navy flight training centers. Another source will be cross-country centers where excess planes were assigned some time ago in the Army's flight instructor program, but maintenance work has progressed, facilitated by improved supply of repair items, to the point that some of the DPC planes may be offered for sale.

CAA regional and district offices where the planes are located will post lists of these for sale, the offering being on a "where-is, as-is" basis with prospective purchasers permitted to inspect the planes before bidding. Bids will be set for bids for each plane, to be filed with the regional office, accompanied by a certified check for 10 percent of the bid price. Bid forms will be available at CAA regional offices and WTS field offices. Sales will be subject to DPC approval.

Philadelphia Airmail Service Restored

Around service to Philadelphia was restored last week by an order of the Civil Aeronautics Board which authorizes All American Airlines to use Washington, D. C., as a temporary terminal, pending the restoration of air service at the

Municipal Airport in Philadelphia. For reasons of safety, all air traffic to Philadelphia Airport was stopped by a Board order Dec. 23. Besides All American, United Air Lines, Transcontinental & Western Air, Eastern Air Lines and American Airlines were affected by the suspension order.

Lighter Equipment—All American's lighter equipment makes possible its use of the Northeast Philadelphia Airport, now under construction. The company plans to have one plane leave Philadelphia daily at 5:45 p.m. and proceed to Washington via Chester, Pa. and Wilmington. It will return the following morning, leaving Washington at 4:41 a.m. The Post Office anticipates that about 300 pounds of mail will be dropped out of Philadelphia each evening, with the prospect of about 400 pounds from Washington on the return trip.

Although the Board's order states that authorization for All American's operations is only until the Municipal Airport is reopened, or the Northeast Airport completed sufficiently for heavier planes to begin operations there, some felt that the temporary entry at Washington was a good "foot-in-the-door" for All American, pioneer pickup company.

KLM Asks 4 Routes

An application for what would be virtually an around-the-world air system was filed with the Civil Aeronautics Board by Royal Dutch Airlines (KLM) and Royal Netherlands Indian Airways (KINLM) last week.

KLM has requested four routes, only two of which have terminals in this country, New York and San Francisco. One route from Amsterdam, the Netherlands, to New York would go by way of England, Ireland and Newfoundland, and an alternate would have Portugal, the Azores and Bermuda as intermediate points.

► Via Manila—Coming into San Francisco from Batavia, KLM wants to fly by way of Manila, Guam, Wake Island, Midway Island and Honolulu, as well as via Australia, New Zealand, Noumea, New Caledonia, Suva, Canton Island, Palmyra Island and Honolulu.

The other routes sought by the Dutch airlines are from Batavia to Manila, by way of Semarang, Soerabaja, Java, Hongkong, Balikpapan, Tarakan and Dutch Borneo, and between Batavia and Tokyo, via Tarakan, Manila, Hong Kong, Shanghai, Nagasaki and Osaka.

Over hills and rolling valleys, these Beechcraft AT-11 bombing trainers carry out a mission. Their crews are preparing themselves for a rugged job—flying bigger bombers over Axis targets. How well they do that job depends greatly on their training... and as combat results testify, American airmen are superbly trained. Bombardiers, pilots, and navigators, more often than not, perfect their skills as Beechcraft... The record of these Beechcraft, in the grueling grid of military training service, endorses the reputation earned by their commercial prototypes in pre-war service from Alaska to Little America—a reputation for doing efficiently and capably any job assigned to them, no matter how rugged that job might be.



EXPORTS "FLYING ACF"

Interior view of one of American Export Airlines' "Flying ACFs," whose occupants today currently are carrying earlier totals of passengers and baggage since AEA began scheduled service a little more than a year out of a half ago. The company's routes, among them that from New York to Poyanes, Ireland, link a dozen

points on four continents, and it seeks Civil Aeronautics Board permission to expand them. Showing 8-44's are used now, but American Export's postwar plane call for new types of flying boats and land planes described as "fast, multi-engine aircraft, capable of accommodating up to 160 passengers in de luxe comfort."

Beech Aircraft

CORPORATION

BECHCRAFTS ARE DOING THEIR PART



WICHITA, KANSAS, U. S. A.



23
years

accessories, too
Oil Separators for de-icing equipment, Flier's Relief Tubes and Fittings and Communication Sets for training planes are typical of the many aircraft accessories produced by Mercury in quantities which assure rush shipments.

AT *The Cradle of Aviation*



that of accumulation of control. Shapiro told me he was engaged in any phase of investigation and if not, what the status of subsequent assignments in such activities has been. Shapiro denied to furnish evidence as to which categories of individuals have been referred to the commission or were apprehended in a phase of investigation since 1970 concerning persons who had been accused of participation by Shapiro and was concerned. DEBARRETT said that he interviewed in the same period, of June 1976, that his position de-

[illegible]

discussed for several different proposed vehicle modifications with the surrounding community. The application of TWVA to include Austin, Tulsa and Oklahoma City is under review. At a pre-hearing conference held before Raymond Lawrence J. Korman, Area 31 will set the date for exchange of exhibits and Apr. 1 an interactive hearing date.

The specific locations are approximately for the general area between Milwaukee and Chicago and New York. IAS covers certain portions of various jurisdictions and consolidated them into six provinces. New York City and New Jersey are assigned to the area between Chicago and New York of jurisdictions of America, Northern, Pennsylvania-Central United and Illinois, which are now consolidated with jurisdictions of Chicago, Northern and IWA. The provincial will be assigned for hearing later.

Vice President Thomas J. Watson and
 United. Flightline recommended in a
 report to CAR that approval be given of
 Western Air Lines' application of initial
 Mr. Lister. They found that the
 agreement of CAR, 1241 between the
 two companies provided for the consol-
 idation of the service of Washington-Boston
 of Ireland, will proceed to purchase
 the remaining 10 shares, "will not re-
 sult in creating a monopoly and there-
 fore retains competitive and promotes
 another air service not party to the con-

The application of Island by Wireline might better serve the public interest, as there has been previous criticism of the licensing procedure as well as existing services. As stated by CNA, and CAP has in two occasions. It will only make, criticized Island's management, suggesting that the company's financial condition would be helped from shareholders' assets, and only to a minor extent from existing loans.

the ethnographic report in the Western Journal came on the evidence failed to reveal, assumed that the French windfall appears of the compensation until someone were agreed, nevertheless failed to consider. The work indicated its problems suggest. The monetary reward is not the same as the monetary reward, with the monetary reward, transfer of employment which is due to the employee and his immediate, it seems unnecessary and unnecessary to deny approval of the entire transaction, proving the diagnosis of possible individual and group-performing differences between individuals.

* Data for first births to his third wife, Alexander Lawrence J. Kasper, of the York-Potomac-Hatfield area has been obtained to Jan. 18.

• **Boomerang Harvey** Fredericka (introduced in a 1990s TV C&A) told TNA, he enjoyed to provide Montgomery, W. Va., as an intermediate point, on Route 41, Fredericka diagnosed with Public Company (Frederick & Frederick's) a conviction that TNA's advertising should not be given in this case and the newspapers from Craycroft Corp. and Elm Ridge 1299.

■ Fair-Atlanta's headquarters there with an area permeation in California is located in Appleton, NY. Air services in the Southern States, South and Central America.

* **Hearings** on applications of Board members is entered weekly in Drug Channels City to Atlanta, Ga., and of Denver, Colo., Chicago and Southern California with Denver, TWA and MIA Companies coordinated in this procedure. WED to hold Feb. 7 in Washington Eastern at 10:00 in the trial chamber.

• U.S. ordered the air crews' evacuation of Hara Flying School, Choshi, Iwate Pref., suspended for 30 days. The company was found guilty of failing to establish four specific programs in a safe and efficient condition.

*Thani at Jordan was awarded such to (allowance as the parent of Stephen from UN's organization for approval by UNHCR in the context of UNHCR. The Department is interested in whether comparison an independent mission will be made by the UNHCR for the continuation of the

• CAA ordered that the restriction on the available fuel tank a 747 aircraft carriers air lanes from serving Vietnam, Laos and Cambodia, N. C. as the case.

of the limited number of aircraft presently available to the Eighth Air Force for purposes most efficient use of aircraft resources that will be served in the main. Right, the Eighth order said.

4. **Interim Air Levels will grow to 100,000**—along so many other assumptions at the intermediate point. Like Chapter 10, we note 5 or 6 national delivery no longer assumes that this service be deferred.

• A further C&D effort to locate personnel is to start operations through the use of Downfall at Columbia S.C. Personnel was assigned to start early work on Jan. 1, 1986, subject to any orders or instructions of Government authorities.

* CAD program, denied our request from Gannett Air Lines. This was a pitiful find asking the owner to reconsider his order granting W. H. Gannett & Co. permission to advertise in the Northwest

• **Vertical coordination** in the Caribbean Free-trade zone offered by CAR has been a source of friction between Caribbean and Latin American countries. The Caribbean Free-trade zone is a free-trade area between Caribbean and Latin American countries. The Caribbean Free-trade zone is a free-trade area between Caribbean and Latin American countries.

• **Compromised Care:** Had an effect with CAD on the number of hours for the distribution of the materials, in the immediate future of that the application to clinical and/or more strict schedules to distribute the products and/or the number of hearings on other pending applications within these regions. Offending states that in application, and its ability to conduct its previous operation national and international.

• **Healthcare:** It is irreversibly impaired by the board's present policy on conducting business and creating a contribution to the



• Various minor amendments to the American Airspace Ordinance concerning

By CAM using them was the intention of Orinco Tellez as she came from Miami to La Oroya, Venezuela. Sub-
sequently, letters were mailed from
Orinco Tellez to the CIA, for the
CIA had thought for Orinco, as in Venezuela.
A "contact" made from Miami
found in Rio de Janeiro, which reduced
the distance from Miami to Rio by about
100 miles, and was a "contact" of
Orinco Tellez, but was not a "contact" of
Orinco Tellez, and therefore was not
included as an intermediate point. This was
also done on Pan American's route
from Miami down the coast of South
America, and was a "contact" of Orinco
Tellez, and therefore was not
included as an intermediate
point on this route.

Bus and truck litter fell one-third of 24 entered in 10 days after Christmas.

The bill is applications for our service which the Civil Aeronautics

holidays ended with a sudden influx immediately after Christmas. In the ten days following, twenty-four applications or amendments were received by the Board. Of these, one-third were from common carriers now engaged in trucking or bus transportation. Several food haulers and flying school operators were heard from, and three operating air carriers.

In the latter group were Eastern Air Lines, Delta Air Corp. and All American Aviation. As a result of an analysis made by Eastern of the need for local air service between Washington, D. C., and New York, the airline asked to have the certificates for routes 5 and 6 amended to include as additional intermediate points the cities of Annapolis and Eastern, Md., Dover and Wilmington, Del. Mitchell, a Washington, D.C., resident, is president of Eastern.

Trenton, New Brunswick and Red Bank-Long Branch-Asbury Park, N. J. Eastern also filed an amendment to a previous application for a route between Detroit and Columbia, S. C., so as to include Wheeling, W. Va., as an additional intermediate stop. The company also asked to substitute Raleigh-Durham in lieu of Raleigh on route 8.

Amended Application—Delta Air Corp. amended its application in the consolidated Great Lakes-Florida proceeding, so as to propose an alternate route between Detroit and Charleston, W. Va. One route would go via Cleveland, the other by way of Toledo and Columbus.

Save those broken drills!

A simple little tool that will save its weight in diamonds. A potential little tool that turns wasted, broken drills into useful, serviceable drills. An efficient little tool that will pay for itself in one week when used in any aircraft plant. A patented device that has saved thousands of dollars in one of America's largest aircraft plants. Now available to all.

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"Where Good Tools Are Made"



**Need Trained Men Equipped
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In the field of AOPA's Civil Aviation and Flight graduates of Alcala del Valle College are looking to such responsible positions as follows:

- *Managerial/Staff - Supervisor - Flight Instructor - Instructor - Section Manager - Chief Pilot - Operations Manager - Traffic Manager - Navigator - Flight Instructor*

For more about our new and old, present day, former and building positions such as those at *Operations and Flight*, only one of the low cost, one day, Aerobically and Professionally Maintained, and *Professional* flights in which *Flight* graduates must be in same the aviation industry.

Write or call: *Clara E. Piles, President*, the nation of *Florida* *Aviation* *Inc.* who may be contacted at: 1-800-368-3688.

PARKS AIR COLLEGE, INC.

Reconversion and Contract Termination

AMERICAN industry is dedicated to an all-out effort to achieve victory, and its good faith in this direction is simply demonstrated by the results.

American industry also is dedicated to making democracy work effectively after the victory. And it is toward this objective that industry must prepare itself to guide the processes of demobilization and reconversion in order to minimize the dislocation and chaos which too easily can result from so tremendous a task.

We entered tonight from the very beginning of the war mobilization program. Let us now exercise foresight in the approaching changeover from a wartime to a peacetime economy.

The first step in converting American industry from military to civilian production is the termination of contracts between the government, procurement agencies and the producers. There are now in force war contracts amounting to tens of tens of billions of dollars. As the demand for weapons of war decreases, the Armed Services will undertake to cancel contracts. With the emphasis shifting from weapons of one category to weapons of another category, many billion dollars worth of contracts already have been terminated. It is hoped that the experience now being gained in this work will provide the basis for effective and sound procedures when an avalanche of cancellations comes later.

Many complex problems involved in the termination of contracts will materially influence the success of the entire reconversion program. Once war demands fall off sufficiently to permit the renewal of civilian production, we will have to act with great speed if we are to avoid large-scale unemployment. Prompt financial settlements of contracts and the rapid clearance of plants are of immediate and great significance. In many cases the removal of equipment and raw materials will be more important than money payments. The allocation of raw material for civilian production will be of paramount importance.

Government agencies obviously must exercise great care in spending the people's money and in protecting the interest of the public against excessive payments. Unjust enrichment at the expense of the people will not be condoned nor will it reflect favorably upon management to present inflated claims. But long-delayed negotiations, which will retard the initiation of civilian production, likewise must be avoided.

The contracting agencies and the manufacturers both know that the greatest losses in the reconversion period will result from delays in getting peacetime production under way. The greatest potential wastes lie in unemployment and in idle

plants. The magnitude of such losses to the public can be far greater than the money spent in industrial settlements, to the manufacturer, these losses can represent vastly more than the extra funds that might result from interminable litigation. Plans must be firmly established now whereby the manufacturers, including subcontractors and suppliers, will receive substantial settlements immediately in order that ample funds be available for reentering plants and accumulating necessary inventories of peacetime goods. War must be overlooked the fact that the uncertainty of long drawn-out disputes will have a stifling effect on enterprise and that final settlements, therefore, should be made as promptly as possible.

Plants that are equipped largely with special wartime tools and machines and that are fully stocked with materials, components, and finished military products will not be able to undertake any substantial degree of conversion until this machinery and this inventory are removed. Advance arrangements are essential for the prompt clearance of great numbers of plants the country over. Adequate warehousing facilities must be ready to be available so that the changeover to civilian production will not be hampered.

As war demands decline, civilian output will be resumed, and while we recognize that the demands for resources and the strategy of the military leaders is changed, it is hoped that the Armed Services already have or soon will develop schedules of their continued needs under different strategic assumptions. If we know in advance the probable curtailment in war requirements, we are in position to estimate the timing and the quantities of raw materials, the number of workers, and the industrial facilities which will be available for peacetime purposes. It will then be possible to integrate the lifting of restrictions on civilian production with the drop in war requirements.

Needless unemployment and idle plants will prevail if restrictions on the output of civilian goods are removed at a slower rate than available manpower, materials and plants permit. On the other hand, if the controls on civilian production are removed prematurely or too freely, then the production of military requirements will be hampered correspondingly. There will be great danger and pressure for eliminating all restrictions as soon as any measurable quantity of materials and numbers of workers are freed from war work. It will resist these pressures, are needed industrially, there must be by retarding the production of munitions for our boys who still will be fighting and dying at the front. The coordination of declining war demands with increasing civilian production probably is the

most difficult and at the same time the most important task in our entire reconversion problem. Advance planning and sound judgment are essential.

An order of priority for initiating non-war or civilian production must be prepared. Beforehand. The schedule of resumption of peacetime production should be governed by the amounts of materials, manpower and facilities that are available as well as by the relative needs or importance of different products. There will be strong competition for priority among the various kinds of consumer goods, equipment needed for reconversion, producers goods required for expansion and modernization, and export demands. Relative need obviously is the most compelling criterion. But because of the importance of expediting reconversion, earliest consideration is urged for the tools and fixtures and models which will expedite large-scale civilian production when adequate labor and materials are available. In any case, advance schedules will be needed to avoid a makeshift, piecemeal lifting of controls on the basis of who shouts the loudest.

Another difficult problem of the reconversion period will be to keep to a minimum the distortion of inter-industrial and intra-industrial relationships. Many varieties of consumer goods compete for the consumer dollar, and many varieties of industrial goods strong resistance if the green light is given first to industries whose products may thereby acquire a time advantage.

Even more difficult will be the matter of competition between companies producing the same products. Some manufacturers may find it difficult to cope with continuing war contracts with restrictions on their peacetime products suddenly lifted and their competitors free to take advantage of the situation. The declining need for different kinds of war material will vary greatly, and some producers will be available for peacetime production considerably in advance of some of their competitors.

This raises the question of victory models or nucleus plants to eliminate competitive advantages among producers of identical products. The producers who win all out in an all-out footing war. Policies controlling this should take into account the degree or the extent of competitive advantage which reconversion might bring, and also upon the time interval during which these advantages will prevail. Such policies necessarily will require increased government control, hence they should be adopted only under the most pressing circumstances.

There is the important question of termination as between large and small plants. Fairness must be observed, and unfair advantages must be avoided in extending opportunities to continue receiving protected war orders or in getting back into civilian production. The problems of small manufacturers must not be neglected in this period. Likewise, any restrictions on new ventures and on more vigorous competition must be judiciously avoided.

There also is the question of communities which have been greatly enlarged and others which actually have been brought into being by the war. It might be advisable to terminate contracts in these areas first, and under the conditions that are most favorable to migrate elsewhere while employment prospects are most favorable. Also, if continued production of some armaments is contemplated after the war, it might be well to concentrate this

production in communities which otherwise would be stranded.

If the process of terminating contracts is to be geared into meeting continued demands for materials and also expediting reconversion, then the Armed Services must accept broad policy considerations as criteria for cancelling contracts. Procurement officers might be inclined to cancel contracts with all high cost producers first. Or they might be inclined to cancel contracts with producers first so as to reduce the administrative burden. Then again, they might cancel the newer producers of specific products rather than the older, time-tried manufacturers.

These procurement criteria may all be highly desirable and advisable, but other important considerations such as those mentioned above must be given proper attention. Demobilization cannot be a separate process from reconversion. They must be united. The termination of contracts is a demobilization task, but an incident that the procurement agencies appreciate the importance of this operation in facilitating reconversion and that they will take full cognizance of the policies necessary for giving every assistance to initiating peacetime production.

I have not attempted to raise all the important policy questions in terminating contracts, nor do I propose specific solutions for each major problem. But it has been my purpose to indicate the complexities of the task which faces us and to urge that intelligent and sound plans be developed now while there is time. By so doing, we can avoid the dislocation and chaos which have characterized other wars might characterize the reconversion period. The better we are prepared, the more rapid will be the resumption of full employment and good business after the war is won.

This job of changing America's industrial pattern from war to peace speedily and efficiently, is one which will tax the talents and knowledge of the ablest business men of the country. These men can, and I am sure that they will, attack this task with the same energy and determination that characterized their efforts in the period of mobilization for war.

Industry advisory committees were established to cooperate with governmental agencies in the great task of reconversion to a full war economy. These committees are the means through which industry has the opportunity to play a major role in the solution of the problems of reconversion. It must assume that responsibility or accept the consequences in the form of enforced government control. Industry must take a renewed interest in these committees and make certain that our best minds and strongest men are available for the challenging job of conversion which we face now. It is a job that must be done well if we are to have a good start on the road to a greater democratic and free enterprise nation.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Company, Inc.

Boeing proposing Washington, D. C., as an alternate terminal in Philadelphia which service is suspended on the latter city, a proposal granted by the Board. All American Airlines seconded a previous application to include Akron, Ohio, as an additional point between Pittsburgh and Columbus, and both added and deleted certain points on a route requested between Pittsburgh and Buffalo.

Truck Lines—Commerce carries who asked to carry mail and express, or freight by air, included Baldwin Transportation Corp., New York City, who want to transport cargo of all kinds from New York, New Jersey and Connecticut to all points in the country; Gateway City Transfer Co., La Crosse, Wis., who asked for seven routes from Chicago to Des Moines, the Twin Cities and St. Louis, to transport several commodities by plane and by helicopter; Golden Carriage Co., Hutchinson, Kan., who asked to provide freight air service through 13 gateways to points in all foreign countries as well as to various points in the U. S.; and Associated Trade Lines, Grand Rapids, Mich., who seek to use helicopters and other aircraft from New York, Boston and Louisville to Detroit and between St. Louis and Chicago.

Chicago and Cincinnati District Transit Co., which operates the "Chicago Loop" motor coach system in Chicago, asked to carry passengers only by helicopter from all points in Indiana to any place in the country. Interstate Buses Corp., West

Springfield, Mass., which operates a motor bus system in New England, proposed to operate air service with their branch routes through-out New England and to upper New York State. If their application is granted, they propose to form a separate division to be known as Interstate Airline Division.

Airline 14 New England States—Another applicant for air service in New England is R. H. Gault, Trucking Co. of Worcester, Mass. Using helicopters and conventional aircraft, the company wants to transport persons, property and mail over 14 proposed routes in New England and New York and to provide non-scheduled service throughout New England and from all points in New England to Albany and Troy, N. Y. Cloud Airlines, a contract carrier of cargo of freight in the state of Montana, proposed air transportation of persons as well as property and mail by helicopter "to and from and between all cities, towns, stations, locations and towns, including unincorporated points and areas within the State of Montana, and all named or designated termini, or unnamed areas, in the State of Wyoming, South Dakota, North Dakota, Utah, Washington and Oregon.

Tri-State Aviation Corp., which operates a CAA approved flight school in Cincinnati, stated that they have written assurance from All American Aviation of the availability of pickup equipment and have been informed that they can purchase used B-10 Stinson aircraft from Defense Plant Corp.

Their application asks permission to open a pickup system for mail passengers and property over 11 routes in the States of Ohio, Indiana, Kentucky, Tennessee and Michigan. The company also asks to use helicopters for service in these states when the craft has been sufficiently developed to carry an economical payload.

Flying Schools—Three other applications were received from operators of flying schools engaged in the War Training Service—Proctor, Southern Airways, Birmingham, which trains Army pilots at six southern bases, has asked for 15 routes which would provide a 7,281 mile network of air lines in eight southern states. It proposes to serve 65 cities and towns. Albert L. Zimmerman, Lewistown, Md., who operates Zanerbury Air Transport, a WTS flying school in Clarkston, Wash., proposes to use two-engine Beechcraft or Douglas planes for air service over three routes, between Spokane and Los Angeles and Idaho Falls, and between Minneapolis, Minn., and Seattle. Third WTS operator was P. T. Air Service, Waco, Tex.

Ray O. Mahan was operating the school, asks to provide a feeder and pickup service over seven routes, mostly in Kansas, but extending also to Amarillo, Tex., Dodge City, S. D. and Fort Plain, N.Y. The company would be known as "Prairie Airlines."

One department store filed application with CAA to provide helicopter service to its customers. The retailer, Kaufmann and Faber Co., which operates Gumbel Bros. in Pittsburgh, wants to transport customers from the roof of their Pittsburgh store over five circular routes in the surrounding trade area.

State Change—The application of Elmer Turner and Robert Fletcher Turner, Sparksburg, S. C., was amended to put it in the name of South East Airlines and to substitute certain laws for those applied for on six routes extending between Cincinnati and Jacksonville.

Other applicants were Max Dach, Fairbury, N. Y., who asked for routes running out of Port Washington, N. Y., to various places on Long Island, and across the Sound to New Haven and Stamford, Conn. **Other Air Routes—**Other applicants were Civil Sides Airline, Cass Airline, which proposes passenger and mail feeder service over two circle routes from Omaha, and air mail pickup service on five additional routes from Omaha. Other applicants included Wood Airways, Cedar Rapids, Wis., and Maxwell Elmer McCarrick, Iron River, Mich., requested almost

identical routes in the territory surrounding Milwaukee to provide air service for passengers, property and mail.

Seaboard Airways, New York,

party to previous hearings on routes between New York-Boston and New York-New Orleans, filed for four routes from Miami to Chicago and Detroit, all via intermediate points.

national trade association of the aircraft manufacturing industry, stating its position as expressed by the Chamber's Personal Aircraft Committee, recommended simplification of requirements either under existing law or under the proposed bill.

Regulation—Modifications suggested in existing law or the proposed bill covered requirements of operators of personal aircraft, the location of landing facilities, airworthiness of planes and safety regulations.

Opposition was expressed against present regulation of aircraft carriers and against Governmental authorization of operation of airports without restrictions for protection of private enterprise. It was suggested that creation or maintenance of a number of public for future military requirements be left to the judgment of the Army and Navy.

Chamber's Position—The statement of the Chamber's position was submitted to Chairman Leo of the House Interstate and Foreign Commerce committee together with expressions of its desire to cooperate with this committee and other legislative groups through discussion "with the purpose of aiding and expediting this important legislation."

The stand of the Chamber's Personal Aircraft Committee, of which Joseph T. Gearing, Jr., of General Aircraft, is chairman, suggested the following simplification of requirements to stimulate the development of private or non-scheduled flying:

"In addition to the demonstrated competency of the person who operates to operate the aircraft, he or she should be required to know the 'Rules of the Road'."

"Regulations governing the operation of privately owned or operated airports, landing strips, or landing areas, should be sharply differentiated from those governing the operation of airports used in scheduled operations."

"The airworthiness of personal aircraft should be the responsibility of the manufacturer, and the manufacturer is willing to accept this responsibility to the public."

"In so far as accidents to personal aircraft are concerned, we are so used for any change in existing law and believe the proposed Air Safety Board should take jurisdiction only over accidents under scheduled operations."

The trade association also recommended a protective clause in the Law Bill which would prevent the Government from operating airports in competition with private enterprise.

Distribution of Aircraft Contracts By States Announced by WPB

California heads list with \$8,700,000,000 out of total of \$44,998,596,000 from June, 1940, through October, 1945.

Distribution by states of aircraft supply contracts totaling \$44,998,596,000, as shown in a summary of war supply and facility orders released by WPB. The contracts are cumulative from June 1, 1940, through October, 1945.

California Leads—California has received aircraft contracts totaling \$7 billion dollars so far in the war program, leading all other states. Other top states are New York, Michigan, Ohio, and Kansas. WPB defines aircraft contracts as those for airframes, airplane engines, propellers and other parts, and such equipment as parachutes and gunships.

Lead Maintained—The report shows a total of \$4.4 billion in all types of munitions prime contracts, conceding that this figure is considerably below total commitments as reported through October for various government agencies.

"An important factor accounting for this difference is the lag between commitment of funds and award of contracts, plus the further lag between award of contracts and reporting of the deliveries."

Regions shown—in a regional breakdown, aircraft supply contracts were granted as follows:

(Approx.)		
1. New York	\$2,871,822,000	
2. California	\$8,700,000,000	
3. Michigan	\$1,200,000,000	
4. Ohio	\$1,100,000,000	
5. Kansas	\$1,000,000,000	
6. Delaware	\$1,000,000,000	
7. New Jersey	\$1,000,000,000	
8. New Mexico	\$1,000,000,000	

11. Illinois	\$1,000,000,000
12. Texas	\$1,000,000,000
13. Pennsylvania	\$1,000,000,000
14. Washington	\$1,000,000,000
15. Connecticut	\$1,000,000,000

Distribution by States—State distribution is shown as follows:

Alabama	\$1,000,000
Arizona	\$1,000,000
Arkansas	\$1,000,000
California	\$8,700,000,000
Colorado	\$1,000,000
Connecticut	\$1,000,000
Delaware	\$1,000,000
District of Columbia	\$1,000,000
Florida	\$1,000,000
Georgia	\$1,000,000

Hawaii	\$1,000,000
Idaho	\$1,000,000
Illinois	\$1,000,000
Indiana	\$1,000,000
Iowa	\$1,000,000
Kansas	\$1,000,000
Kentucky	\$1,000,000
Louisiana	\$1,000,000
Maine	\$1,000,000
Maryland	\$1,000,000
Massachusetts	\$1,000,000

Michigan	\$1,200,000,000
Minnesota	\$1,000,000
Mississippi	\$1,000,000
Missouri	\$1,000,000
Montana	\$1,000,000
Nebraska	\$1,000,000
Nevada	\$1,000,000
New Hampshire	\$1,000,000
New Jersey	\$1,000,000

New York	\$2,871,822,000
North Carolina	\$1,000,000
North Dakota	\$1,000,000
Ohio	\$1,100,000,000
Oklahoma	\$1,000,000
Oregon	\$1,000,000
Pennsylvania	\$1,000,000
Rhode Island	\$1,000,000
South Carolina	\$1,000,000
South Dakota	\$1,000,000

Tennessee	\$1,000,000
Texas	\$1,000,000
Vermont	\$1,000,000
Virginia	\$1,000,000
Washington	\$1,000,000
West Virginia	\$1,000,000
Wisconsin	\$1,000,000
Wyoming	\$1,000,000

Off Contract	\$1,000,000
Not Designated	\$1,000,000



NAVY PUTS ITS VERSION OF B-26 TO WORK.

The Navy is using its version of the well-known Martin Marauder for diving other than bombing, as shown in this photo, taken at Norfolk Naval Operating Base. In this case the JM-2, the Navy designation, is redup out on aerial target for practice operations.

Simplification of Air Rules Urged By ACC to Spur Private Flying

Necessity for stimulating post-war development of private or non-scheduled flying through regulatory legislation differentiating between operation of personal aircraft and that of commercial or scheduled air-

craft was emphasized by the Aeronautical Chamber of Commerce in expressing general accord with the objectives of the Law Bill to revise the Civil Aeronautics Act of 1938. At the same time, the Chamber,

Aircraft Equities Selling at Prices Equal to Last Year's Earnings

Study of Bech and other companies reveals curious slippage in shares of plane manufacturing firms; 1943 not expected to top previous year.

By ROGER WILCO

Aircraft equities in many instances are selling at prices equivalent to last year's earnings. Further, by incidence, aircraft earnings for 1943 will most likely exceed those for 1942 by considerable margins.

An indication of this trend is afforded by the results recently reported by Bech Aircraft Corp. for the fiscal year ended Sept. 31, 1943. For this period, the company showed net profits of \$4,000,000 or \$10.40 a share and compared with adjusted earnings of \$1,800,000 or \$4.40 per share for the previous fiscal period. Negotiated refunds and provisions for additional refunds aggregated \$25,324,418 in the latest fiscal period. It may be some time before the company can be certain it will not be subject to any further refund for the current period. The reported profits, in any event, are substantial and in the light of the amount of refunds already indicated, may not be adjusted to any appreciable extent if at all.

Slippage.—The Bech earnings reveal the curious slippage of the company's stock selling at a price approximately to that of reported annual earnings. Thus, too, is a characteristic of many other aircraft equities.

The key to the astonishingly good 1943 results for Bech — and for other aircraft companies (as their reports will reveal) — is simply volume production. Profit margins are unusually low, generally less than 3 percent. Earnings, however, have been at sustained high levels throughout last year, thus making for profitable results. Aircraft production for 1943 is estimated at about \$1 billion and compares with \$4 billion for 1942.

Refunds.—Material refunds have been made but observers strongly believe the aircraft companies will be permitted to retain for at least the same amount of earnings

as reported for the previous year. Further, any constructive action on price negotiation and contract termination, now being considered by the Bech group, can prove to be very beneficial to aircraft earnings.

A guide to 1943 aircraft earnings may be found in 1942 final results, which can serve as a conservative minimum estimate. Table presents these data along with 1943 earnings and market price for representative aircraft companies.

Anomaly.—It can be seen that in many instances, 1943 was a better year than 1942. Volume production, however, may well make 1943 the most profitable year for the aircraft industry as a whole. Yet, the steadily exists in that current market prices, for many of the aircraft equities, are equal to recent annual earnings. The market evidently has been cautious in taking too optimistic a view of the future in store for the aircraft business.

The process of discounting the future, however, may give a way way when prices completely ignore basic values. For example, with at least two and three years of good profits and stock selling at only one times current earnings, there develops the likelihood of basic asset values becoming available at material discount levels. For instance, Douglas is estimated to have a basic value of about \$60 per share. Yet, the company's stock sells at about half that price. Similar ratios pertain to Boeing, Curtiss-Wright, Martin and possibly a few others.

Balance Sheet.—As a matter of fact, if current balance sheet details were now publicly available, it could be seen that a number of companies have net working capital in excess of the market price of their equity shares. In other words, at present prices, if these companies

were liquidated, the stockholders could receive their original investment in the form of cash or its equivalent and retain a worthwhile interest in the plant and other equipment of the enterprise.

These unusual price disparities have existed at one time or another for many industrial groups—particularly in the capital goods category. No clear-cut formula is possible, however, as few industrial assets are ever liquidated immediately and voluntarily for the benefit of the stockholders. A series of deficit years can erode many a healthy cash balance.

Nevertheless, a look at basic asset values can prove enlightening to those who have hope and investments in the aircraft industry's prospects. In fact, it is precisely this construction, supported by other factors, which has led to noteworthy strength in aircraft recent weeks.

Aircraft Earnings and Market Prices as of January 6, 1944

Company	1942	1943	Share	Price
Bech Aircraft Corp.	\$4,000,000	\$10.40	100	\$10.40
Boeing	\$1,800,000	\$4.40	100	\$4.40
Curtiss-Wright	\$1,200,000	\$3.00	100	\$3.00
Douglas	\$1,000,000	\$2.50	100	\$2.50
General Motors	\$1,000,000	\$2.50	100	\$2.50
Grumman	\$1,000,000	\$2.50	100	\$2.50
North American	\$1,000,000	\$2.50	100	\$2.50
Republic	\$1,000,000	\$2.50	100	\$2.50
Rockwell	\$1,000,000	\$2.50	100	\$2.50
Waco	\$1,000,000	\$2.50	100	\$2.50

Source: Earnings from Standard and Poor's Aircraft Industry Survey and complete reports.

Financial Reports

Solar Aircraft reports for the six months ended Oct. 31, 1943, a net profit of \$149,474 after charges and a provision of \$1,235,432 for federal taxes on income, equal after preferred dividend requirements to \$1.23 a share on the 217,251 common. These earnings are subject to re-evaluation. The company, with net profits of \$222,798 or 87 cents a common share for the six months ended Oct. 31, 1942, when federal tax provision amounted to \$1,194,047.

Atlas Largest Holder Of Northeast Stock

Largest single stockholder in Northeast Airlines now is Atlas Corp., New York holding company, according to testimony last week before a Civil Aeronautics Board committee, classing the long series of hearings on proposed additional air service from Boston to New York.

Sam J. Solomon, chairman of Atlas, said his office holds 96,000 shares. Barlow and Meigs and

Mark Central railroad, he testified, have reduced their holdings from 30 to a 10 percent interest, having disposed of 100,000 shares. Of these, Atlas got 44,000 and had option on another 40,000, which later was sold through other channels.

Leatrice F. Whittemore, assistant to Boston & Maine's president, has resigned as vice-president and director of Northeast.

Air Officials' Trading In Own Stocks Mixed

No definite trend shown in transactions, SEC November report shows.

Aviation officials continued on the inactive side among security transactions as reported for November by the Securities and Exchange Commission. The low trading made was without pattern as to a definite trend.

Among the airlines, C. G. Adams sold 100 shares of Boeing, earning 1,000. On the other hand, Francis Hartley bought 1,000 shares of Colonial, bringing his total holdings to 3,333 shares. Charles G. Rosenblatt sold, on a net basis, 36 shares of American, retaining 250.

Aluminum Mixed.—Aircraft trades also were mixed. Russell Van Horn sold 1,000 shares of Brewster, which left him without an interest in the company. William P. Carey, of Curtiss-Wright Corp., sold 100 shares of his company's common and bought a like amount of the Class "A" shares. H. J. Lindquist, of the same company, bought 100 shares of common, bringing his holdings to 200 shares.

During November, Bell Aircraft issued a 10 percent stock dividend which increased the holdings of many of the officers. Major changes among the Bell organization officials were as follows:

Officer	Stock Held Before	Total Stock After
Charles L. Bell	100	210
W. H. H. Bell	100	210
W. H. H. Bell	100	210
W. H. H. Bell	100	210
W. H. H. Bell	100	210

Martin Pension Plan

Glenn L. Martin announces an employees' pension plan under which all employees of Glenn L. Martin Co. and its subsidiaries who are under 65 and who have had two or more years of continuous service with the organization will benefit.

Approved by the Treasury Department, the plan was said to be

particularly attractive in that all employees, regardless of individual salary classifications, will be eligible for pension benefits without any contribution on their part.

Scaled Models Aid Plant Layouts

Use of scaled models to improve floor space efficiency in its plants has been initiated by Fleetwing division of Kaiser Cargo, Inc.

Knowing that efficient layout may mean the difference between profit and loss, the company has studied various methods used by other companies, including paper cut-out models of only two dimensions, and drawings. It has adapted movable scaled models, of proper shape, painted in distinctive colors and placed on a surface representing the over-all floor layout of the area under study.

Flexibility.—Models are of various scales. Floor is sheet cork. Occasionally plaster is used for shaping. Uprights and walls are included, with desirable coloring of transparent plastic. Optical points can cover obstacle floor plans to permit re-use of the floor. Production flow lines are shown by colored tapes. Models are portable.

Photographs are made at various stages which serve as basis for reports by the supervisors whose department is being revised. Experience has shown that the models are "infinitely better" for discussion of layout problems.

UAL Expert Sees Rise In Diesel Aircraft

Davies forecasts plane engines up to 4,000 hp and marked improvement in aluminum alloys and plywood plants.

Predictions by an air research expert of a "considerable increase" in civil aircraft use of diesel engines probably in the next decade almost coincided with Army disclosures that jet propulsion principles had been proved and found practical.

W. W. Davies, superintendent of research for United Air Lines, told the Chicago section of the American Society of Mechanical Engineers that the next five years may see aircraft engines developing 4,000 hp, with weight per horsepower reduced from the present 3½ pounds to one pound and maybe less. Prospects also are good, he said, for improvements in aluminum alloys, marcanium, plastic bonded plywood, plastics and stainless steel for use in aircraft manufacturing.

Costs.—Development may bring airline operating costs down to 15 to 20 cents a mile within 10 years after the war. Davies expects, as compared with 40 cents now. He thinks 11-hour transcontinental schedules and 250 mph black-to-black speeds, instead of the present 48, will be maintained by de luxe airlines within five years after the war ends.

Davies has been with United eleven years. He is a graduate of the Armour Institute of Technology.



Models Improve Plant Layouts: Fleetwing division of Kaiser Cargo, Inc., is using scale models to improve plant layouts. A finished model proposal is shown above.

Selling Aviation Short

"THE ONLY PEOPLE selling aviation short are those who make a living at it." A well known Washington correspondent for a big midwest newspaper was explaining with more colorful language than can be reproduced here. His charge was leveled at—strange anomaly—the publicity chief for an airline.

The publicity man had just finished putting the newspaperman right on some things. He had said helicopters were greatly overrated and shouldn't be expected to develop into much, that this country's potential interstate air traffic was far less than most air transport leaders will concede, and that the international air traffic picture was pretty black.

The newspaperman continued his complaint with a long and documented discourse that everyone he talks to in aviation is disconcertingly stuffy about flying possibilities, because of unsolved technical difficulties which will prevent lower fares and cargo rates by next week.

The interchange was followed a few days later by the jet propulsion statement, with competent authorities admitting that the first plane we ever built with this revolutionary power probably has already flown more than 450 miles an hour at 40,000 feet or better. And this plane by no means represents our only effort in the new field.

Predictions are dangerous in any business. More so in aviation. Framed and hanging in the office of this writer—as a constant reminder—is an editorial which emphasizes this, from the reputable and thoughtful *Scientific American* for July 16, 1910. It points up the need for care in selling aviation short.

U^{SE} was the title of "The Myth of the Aeroplane Bomb," the editorial writer said, for example: "The *Scientific American* has no wish to depreciate the skill shown by Curtiss in successfully dropping imitation bombs within an area which represented the deck of a battleship, but in the interests of truth and cold logic we feel compelled to give it as our opinion that, so far as the future of naval warfare is concerned, this dextrous feat of the aviator has but little significance.

"It was inevitable, when an art so difficult and seemingly impossible as that of human flight had

once been demonstrated, that the enthusiasm of its votaries would carry them into the fields of wild speculation and prophecy, and that each mutual excess, however modest, would be taken as proving to a demonstration many a difficult problem, whose practical solution could be arrived at by only the well-beaten road of experiment and accumulated experience . . .

"T^O HIT A BATTLESHIP with aeroplane bombs, even if they be let go from the perfected flyer of the future, is a problem most complicated. We do not hesitate in any way to take accurate aim from a safe height, clear of shrapnel fire, would involve such very accurate data and such complicated calculations of height, speed of aeroplane, speed of ship, speed of falling shell, wind velocity, direction of aeroplane, etc., and the shell, if it did strike home, would do such insignificant damage, that to affirm that the aeroplane is going to 'revolutionize' the naval warfare of the future is to be guilty of the wildest exaggeration . . . By what means is the aviator to gather these many data, translate them into a final result, and drop his shell at the one critical instant of time that would insure a hit?"

"The problem would be serious were he asked quietly at his desk on shore. By what magic, then, shall he work it out when he is winging it, a thousand or fifteen hundred feet in mid-air, with the roar and screams of the bursting shrapnel about him?"

Quoting these paragraphs of 34 years ago is not intended as ridicule. Nor as an excuse for those who predict "wildly" today. The fewer predictions the better.

Nevertheless, those already in aviation who do not have the imaginative awareness to grasp every possible means of technical improvement must be ready to find themselves tossed aside one of these days. They must make room for others who are willing to work like fury, who admit that nothing is impossible forever in this business, and who have decided the sooner we overcome those "insurmountable" obstacles the better.

That Washington correspondent had a good point.

ROBERT H. WOOD



GET READY TO LIVE IN A SMALLER WORLD

After Victory, you're going to find the post-war world much smaller—when measured by travel-time. You'll be able to run down to Rio over night; to Chungking over the weekend. From Mayfair in London to the Mayfair Hotel in St. Louis, will be a matter of hours—not days.

You'll get to know your neighbors in other countries a lot better. For you'll be doing business with them—and seeing them—much more often.

With home-based helicopters, the hills of New Hampshire and the meadows of Maryland may well become suburban homesites for New Yorkers.

Right now, of course, the main job for all of us, is to do everything we can to hasten the victory which will make such developments possible. That's why at McDonnell, we're working three shifts making planes, parts, and plastics for war—meeting production requirements as *scheduled*.

McDONNELL Aircraft Corporation
Manufacturers of PLANE • PARTS • PLASTICS • SAINT LOUIS • MEMPHIS •



Appointment at Seven ... *SEVEN MILES...UP!*

Seven miles or more above Nazi earth a big, barrel-chested, brutal-looking fighter plane has an appointment with a Focke-Wulf. This appointment was written down in the engagement book of the Army Air Forces a long time ago, *before we had a fighter plane that could work effectively at 35,000-40,000 feet.*

Keeping this appointment is—the P-47 Thunderbolt!

...escorting heavy bombers on raids deep into Europe...rolling up combat scores of 2 to 1, 4 to 1, even 15 to 1 against Germany's best fighters.

In designing a six-ton stratosphere fighter, Republic Aviation solved many long-standing problems in the field of high speed, high altitude aircraft. After the war, long distance commercial planes will fly more safely, more swiftly, more economically—because they'll fly *high*. Republic Aviation Corporation, Farmingdale, L. I., N. Y. and Evansville, Ind.



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